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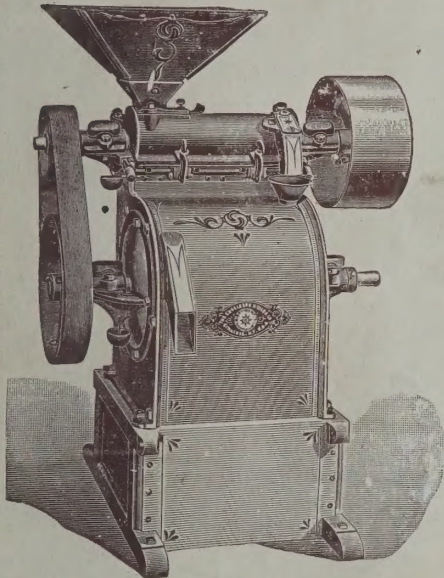
WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIII.

NEW YORK, DECEMBER, 1903.

No. 1.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

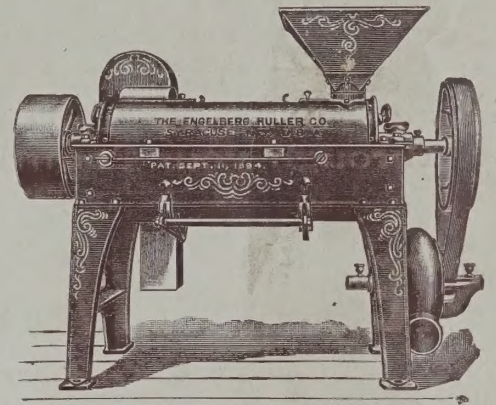


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the **Only** machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.

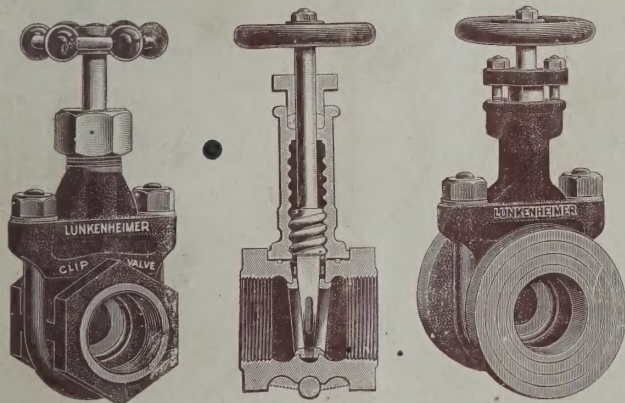


Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

THE ENGELBERG HULLER COMPANY, P. O. Box B, Syracuse, N. Y., U. S. A.
Export Office: 339 Produce Exchange, New York City.

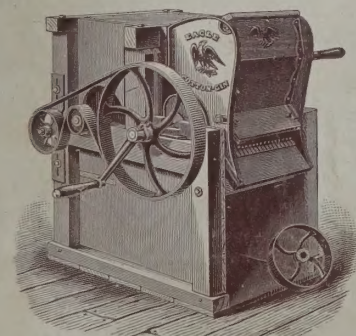
Lunkenheimer Clip Gate Valves



BRANCHES: New York, 26 Cortlandt Street.
London, 35 Great Dover Street, S. E.
Paris, 24 Boulevard Voltaire.

have single discs, but double seated, and take pressure from either end. Made in screw ends from ½ inch and flange ends 2 inches and larger. Made of cast iron; all wearing parts of brass. Body and hub held together by a steel clip, hence easily taken apart. Joint between body and hub made indestructible by an imbedded seamless oval copper wire washer. Compact and unequalled for all ordinary pressures. Made also in ALL IRON for cyanide and other acids. Every valve rigidly tested and inspected before shipment. Specify them and order from any leading export house. Write for catalog of Brass and Iron Steam Specialties and Engineering Appliances of superior quality.

THE LUNKENHEIMER CO., Sole Makers,
CINCINNATI, OHIO, U. S. A.

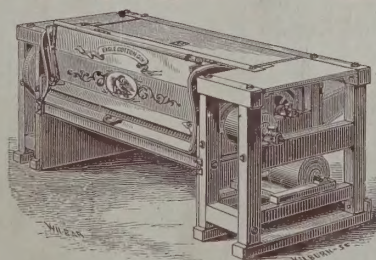


Hand Gin.

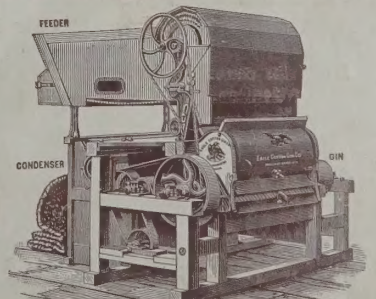
EAGLE COTTON GINS.

These Gins enjoy a **BETTER REPUTATION** THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are **PREFERRED** to all others made, on account of their **STRENGTH, SIMPLICITY, DURABILITY,** the amount and **EXCELLENCE** of the work they accomplish, and the **RAPIDITY** of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

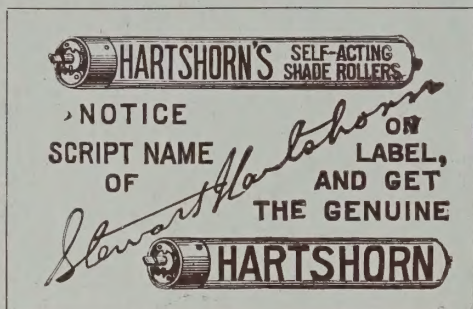
CONTINENTAL GIN CO., Inc., Successors to **EAGLE COTTON GIN CO.,** BRIDGEWATER, MASS., U. S. A.

Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

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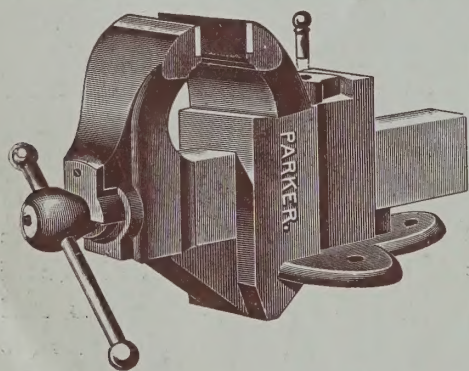
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STEWART HARTSHORN CO.

Office and Factory:

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Unequaled for
Strength, Durability
and Finish.

Has stood the test of over
50 YEARS.

EVERY VISE MADE FOR
SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP
USED IN THE MANUFACTURE OF THESE GOODS.

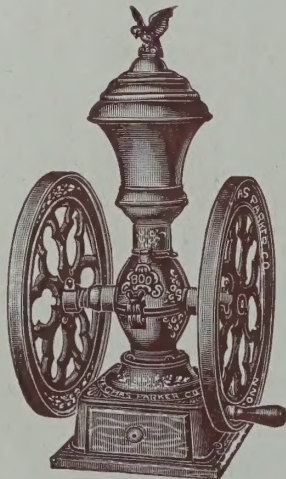
Have been in use for over 60 YEARS and will stand comparison with any Mill in the market.

We manufacture a line of
Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

Enquiries concerning our line will have prompt
attention. Catalogues on application.

THE
CHAS. PARKER CO.,
MERIDEN, CONN., U. S. A.

NEW YORK SALESROOM: 96 CHAMBERS STREET



DIETZ Nos. 30 and 60 TUBULAR SEARCH LIGHTS.

These lamps are made for outdoor or indoor use. They give a powerful and brilliant light, and are not affected by the wind.

They are suitable for use in mills workshops, warehouses, stables and summer resorts, or in any other place where a good light is required which will not be affected by strong breezes.

Where it is desired to light up a long row of animals or a long, narrow room of any kind, these lamps are especially desirable.

No. 30 is fitted with our patent bull's-eye lens on perforated plate, adding to the appearance of the light.

No. 30 has a blizzard globe, 1-inch wick and a bright tin reflector 12 inches in diameter. Price, \$30.00 dozen.

No. 60 has a No. 2 globe, 1½-inch wick and a bright tin reflector 16 inches in diameter. Price, \$72.00 dozen.

We are pleased to send complete catalogues (Spanish or English) and price list to those interested.

**R. E. DIETZ
COMPANY,**

NEW YORK, U. S. A.

Established 1840.



ARCADE MANUFACTURING CO.

(INCORPORATED 1885).

MANUFACTURERS OF

"PHOENIX" Cork Pullers,

"Champion" and "Handy" Cork Pullers.

ALSO

"PERFECT" LEMON SQUEEZERS

AND THE

"Crystal," "Imperial,"
"Jewel," "X-Ray," "Royal
Pound," "Telephone," "New
Home" and "Favorite"

COFFEE MILLS.



"Phoenix" Cork Puller No. 30,
Without Bottle Holder.

NEAT, SIMPLE, COMPACT.

"So simple any one can
operate them"

Can be fastened to Bar, Shelf,
Ice Box or Wall.

No. 30.—Especially adapted for family use. **Sample Dozen**, boxed ready for steamer, F. O. B. cars New York \$13.50
Size of box, 12x14x30 inches. Weight: gross, 70 pounds; net, 54 pounds.

No. 60.—With bottle holder, adapted for heavy work. **Sample Dozen**, boxed ready for steamer, F. O. B. cars New York \$25.00
Size of box, 12x14x36 inches. Weight: gross, 75 pounds; net, 60 pounds.

Orders received through export houses. Please mail duplicate order to us.
Our Illustrated catalogue sent postpaid.

ARCADE MANUFACTURING CO.,
Hardware Specialty Mfrs., FREEPORT, ILLINOIS, U. S. A



"Phoenix" Cork Puller No. 60
With Bottle Holder.



No. 555—\$20.00.



No. 515—\$100.00.



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MANUFACTURERS OF

High-Grade Desks and Sectional Bookcases

FOR THE OFFICE AND HOME.

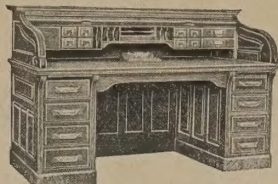


NEW DESIGNS.

SUPERIOR WORKMANSHIP.

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Our New Line of Sectional Bookcases and Desks, recently placed upon the market, embody the results of over Twenty Years' Practical Experience in Actual Manufacturing.



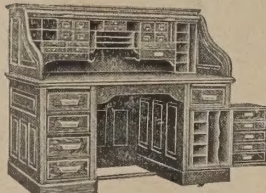
No. 505 1/2—\$130.00.



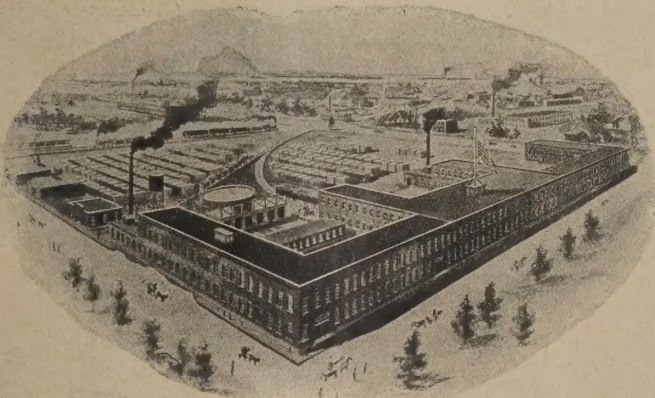
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Works of the GRAND RAPIDS DESK CO., Muskegon, Michigan, U. S. A.

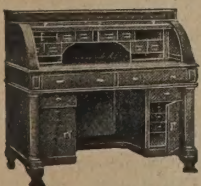
The prices here quoted are for desks boxed ready for steamer, f. o. b. New York. Orders received through export houses. To avoid errors please mail a duplicate of order to us.

Our 100-page Catalogue, illustrating the various styles of Desks and Bookcases made by us, mailed postpaid.

GRAND RAPIDS DESK CO.

Manufacturers,

Muskegon, Michigan, U. S. A.



No. 4—\$80.00.



No. 3—\$70.00.



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The LEONARD Cleanable Refrigerators.

Freely Acknowledged to Be the Best in the World.

Made in GRAND RAPIDS, MICH., U. S. A.

Seven walls to save the ice. Air-tight locks. Sliding, adjustable shelves, and many other improvements. Outside cases, ash with quarter-sawn oak panels, dark golden finish. Walls packed with mineral wool. These prices F. O. B. New York, Boston, Philadelphia or Baltimore, crated for export. The sizes given are: first, width across the front; second, depth from front to back; third, height. All outside measurements in inches.



Single door, zinc lined.
No. 070—Size, 25x17x40.....\$7.19
No. 70—Size, 27x18x42.....\$8.61



Single door, zinc lined.
No. 71—Size, 30x19x45.....\$10.31
No. 71A—Size, 32x20x47.....\$11.65
No. 72—Size, 32x24x48.....\$12.91



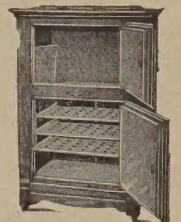
Double door, zinc lined.
No. 73—Size, 33x20x46.....\$12.50
No. 74—Size, 35x21x48.....\$14.06



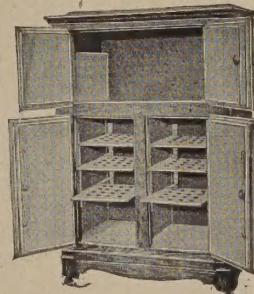
Apartment House, zinc lined.
No. 93—Size, 27x18x49.....\$10.60
No. 94—Size, 29x19x55.....\$12.34
No. 95—Size, 30x20x60.....\$13.96
No. 96—Size, 36x24x68.....\$20.45



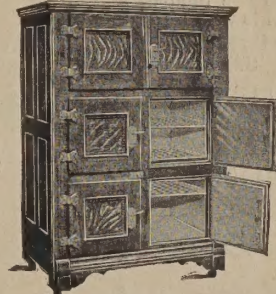
Double door, zinc lined.
No. 75—Size, 40x23x50.....\$18.20



Apartment House, zinc lined.
No. 95—Size, 33x21x45.....\$12.16
No. 96—Size, 35x22x53.....\$14.50



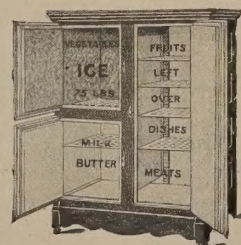
Four doors, zinc lined.
No. 93—Size, 38x22x48.....\$17.75
No. 60—Size, 40x25x57.....\$22.25
No. 77—Size, 48x25x62.....\$24.95



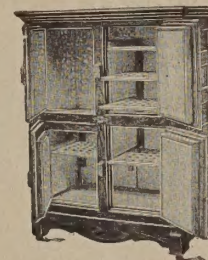
Six doors, zinc lined.
No. 58—Size, 45x28x85.....\$32.60
No. 60—Size, 54x31x78.....\$42.60
No. 62—Size, 55x32x79.....\$47.00
No. 66—Size, 64x35x85.....\$58.20



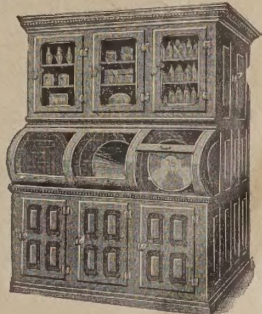
Double doors, lined with real Porcelain on sheet steel.
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Single door, lined with real Porcelain on sheet steel.
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Three doors, lined with real Porcelain on sheet steel.
No. 4—Size, 35x22x46.....\$22.35
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Four doors, lined with real Porcelain on sheet steel.
No. 57—Size, 47x28x60.....\$40.75



No. 323—Grocer's Refrigerator; wood lined, polished oak cases. Roll top for butter bins; storage below. Ice in top at rear.
No. 322—2 rolls; size, 46x41x84, \$65.00
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GRAND RAPIDS REFRIGERATOR CO., Grand Rapids, Mich. U. S. A.

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For Electrotypes, Coins, Minerals, Specimens of Natural History, Proofs, Engravings, Tools, Laces, Jewelry, Dental Supplies, Etc. Made of golden finished oak. Each section has 10 drawers 1 1/2 in. deep and is 36 in. wide, 24 in. deep and 10 in. high. Price, f. o. b. cars New York, each Section, \$6.00; Top, \$1.00 extra; Base with Casters, \$1.50 extra. Weight, boxed ready for steamer, 100 pounds.

Leonard Catalogue Cabinet.

A convenient method for filing and classifying over one thousand Catalogues, Circulars, Etc. A Cross Index System accompanies each Cabinet. Made of golden finished oak, highly polished. Size, 32 inches wide, 24 inches deep and 63 inches high. Mounted on strong ball-bearing casters. Price, f. o. b. cars New York, \$27.75. Weight, boxed ready for steamer, 375 pounds.



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LEONARD MANUFACTURING CO., Grand Rapids, Mich., U. S. A.
New York Office, 54 Warren St. E. L. D. HESTER, Manager.

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The Profit you make by Selling our Specialties is not the only thing—a Satisfied Customer is Another Result.

THE BEST IN AMERICA.

We say without fear of successful contradiction that SILVER CREAM is the best Silver Polish this country has ever produced.

SILVER CREAM is absolutely free from acids, grit or other injurious substances. It is unequalled for Polishing and Cleaning articles of Gold and Silver, also Cut Glass, Window Glass, Mirrors, Gloss Paint, Marble, Porcelain Bath Tubs, Kitchen Utensils, Etc.

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It may be possible to make a better polish for metal than NEW CENTURY METAL POLISH, but up to the present time it has not been done. It will clean quicker, polish brighter and last longer than any other polish. It is unsurpassed for Cleaning and Polishing articles

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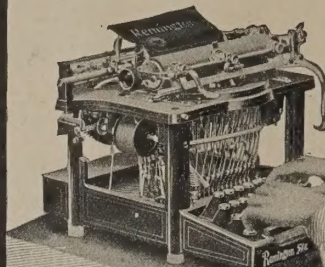
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Sole Agents for Great Britain and the British Colonies.



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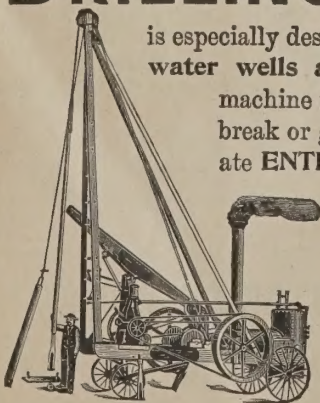
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is especially designed for drilling oil or gas wells, water wells and mineral prospecting. Every machine is complete, and is so built as not to break or get out of order, being made to operate ENTIRELY WITHOUT SPRINGS.



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**Star Drilling Machines are made in Ten Sizes.
Will Drill 250 to 2500 Feet.**

They are the very best machines on the market. We also manufacture Drilling and Fishing Tools.

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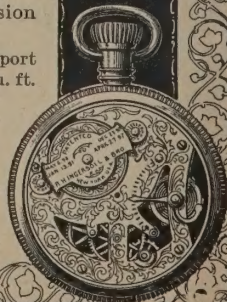
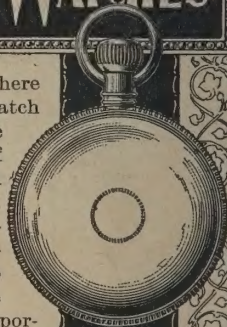
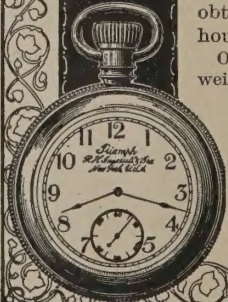
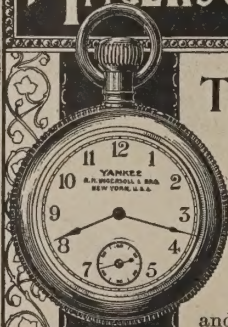
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Send all orders through your commission house and send us copy of same.

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ESTABLISHED 1846.

ESTEY ORGAN COMPANY,

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Builders of High-Grade Organs and Pianos

Over three hundred and fifty thousand (350,000) in use throughout the civilized world.

The **Estey Reed and Pipe Organs** are specifically made for use in churches, chapels, music and lecture halls, Masonic lodges, schools and residences.The **Estey Pianos** are made in several styles of Upright and Grand.

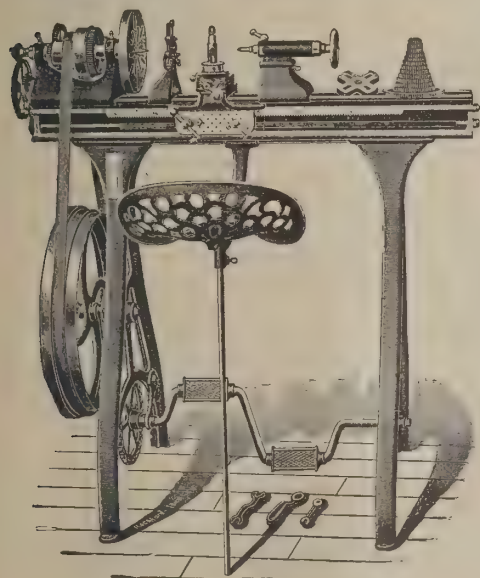
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Made in mahogany, oak and American walnut. 7½ octaves, scale A to C. Height, 4 feet 3 inches; Length, 5 feet; Depth, 2 feet 3 inches; Weight, boxed, 850 pounds.

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Solid walnut or oak case. Height, 6 feet 7 inches; Breadth, 3 feet 9 inches; Depth, 1 foot 9 inches; Weight, boxed, 350 pounds.

**Barnes' Patent Foot, Hand and Steam Power Machinery**

FOR WOOD AND METAL WORK.

SCROLL SAWS, CIRCULAR SAWS, LATHES, MORTISERS, TENONERS, GRINDING MACHINES, DRILLING MACHINES, ETC.

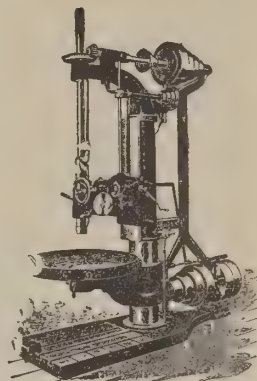
Particular attention given to the proper execution of orders for export. Illustrated catalogues and price lists in Spanish and English free on application. Orders received through any reliable commission house in the United States. Prices and trade discounts quoted on application.

W. F. & JOHN BARNES CO.,

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Rockford, Illinois, U. S. A.

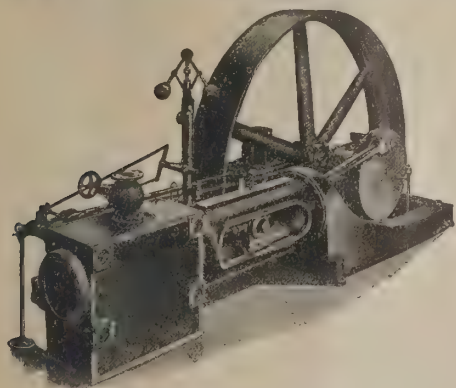
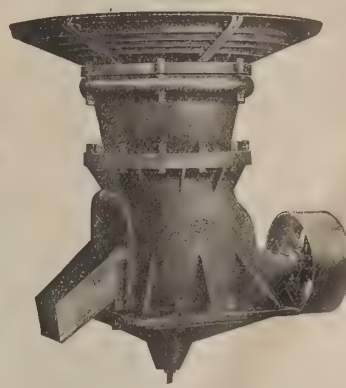
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Mining Machinery

OF EVERY DESCRIPTION.

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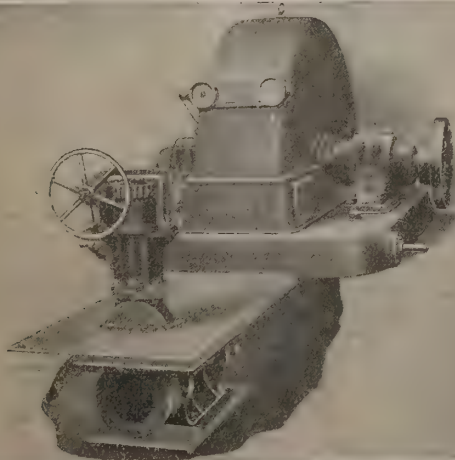
GATES ROCK AND ORE BREAKERS.Pumping, Blowing and Hoisting Engines,
Air Compressors.**REYNOLDS CORLISS ENGINES FOR ALL POWER PURPOSES.****REYNOLDS CORLISS ENGINES**
for All Power Purposes.**GATES ROCK AND ORE BREAKER.****PELTON WATER WHEELS**

Where water power is used much depends upon the water wheels—Pelton Wheels have a reputation backed by fifteen years of continuous use by the best-known hydraulic engineers in the world. Every water-wheel requirement has been incorporated into the manufacture of these wheels—brains and practical experience have combined to make the Pelton a water wheel of the most efficient type. Send for catalogue.

PELTON WATER WHEEL CO.

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WHITEMORE'S POLISHES, The World's Standard.

Oldest and Largest Manufacturers
of Boot Polishes in the World,
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For blacking and polishing Ladies' and Misses' kid and all fine black shoes.
The only Ladies' Shoe Polish that positively contains oil. Softens and preserves. Imparts a beautiful finish. Once used, always used. Finest quality in the world. With cork, wire and sponge; polishes without brushing.

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"Superb" Polishing Paste.

For polishing all articles made from Patent or Enamelled Leather.

Price, per gross, large tin boxes, \$6.50. Discount, 10 per cent.
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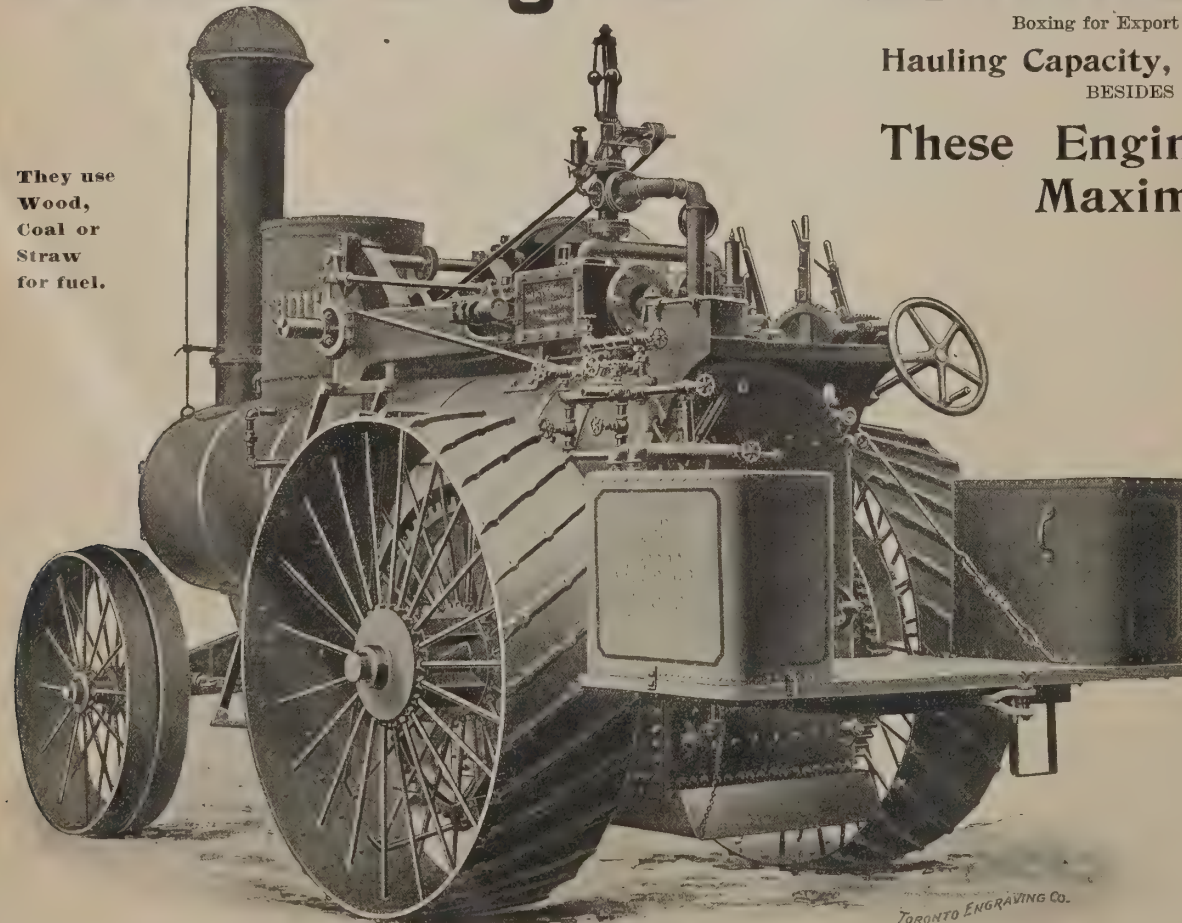
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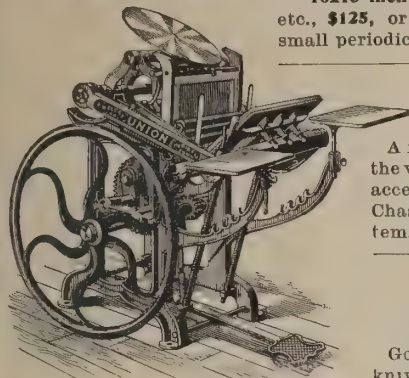


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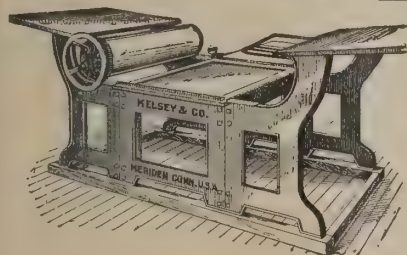


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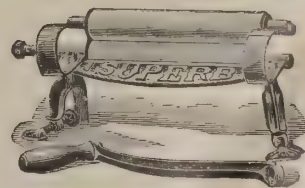
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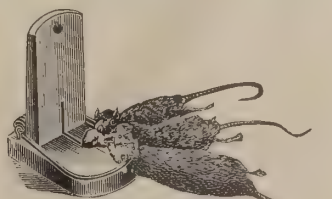
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Mouse Trap.



Rex Trap.

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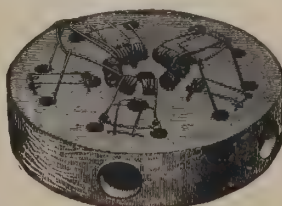
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Best Trap on Earth.

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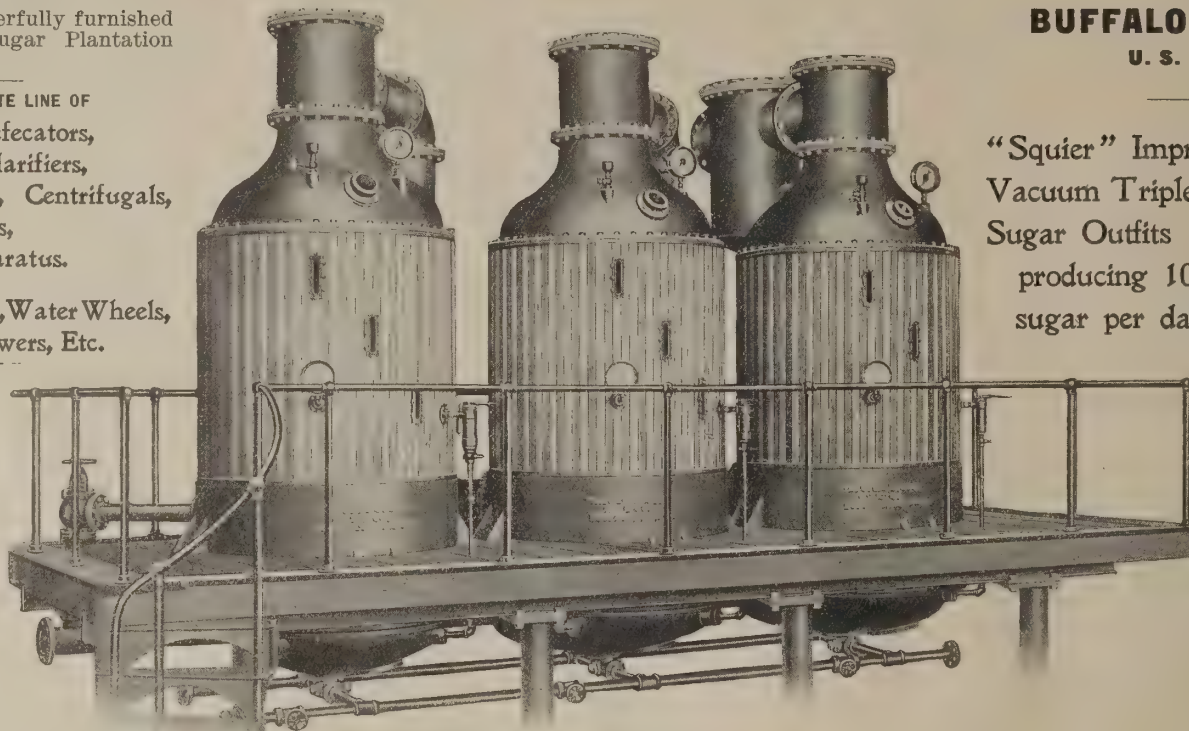
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[Founded by Howard Lockwood & Co., 1877].

THE JOHN C. COCHRAN COMPANY, - - - Publishers
 Bennett Building, New York.

EDWARD W. DREW, - - - Editor.

Published on the 1st of each month.

Subscription, to any part of the world, \$2.00, or an equivalent sum in any other currency. Single copies, 20 cents each. Advertising rates on application.

Entered at the New York Post Office as Second-class Matter.

ADVANCES IN AUTO INDUSTRY.

WINTER tests of commercial automobiles are planned by the Automobile Club of America, and the conditions will be made as severe as possible, in order to determine to what extent improvements may be necessary in the present methods of construction. It is proposed to have the run occur some time in February, when the machines will have to encounter snow, ice and mud, the idea being to test the capacity of the machines as all-the-year-round vehicles, which they must be in order to be commercially serviceable in zones which are not tropical. No details have yet been determined upon, but every effort will be made to provide for thoroughly effective tests, which the manufacturers are inclined to welcome, for they believe that they have very nearly achieved success in making a serviceable vehicle for commercial uses at a price that is not exorbitant. American manufacturers of automobiles have devoted a great deal of time, care and money to putting practical business vehicles upon the market, and if the February endurance tests shall develop any weak points the remedy will be at once applied, for the auto makers are anxious to secure perfection in their machines. Practical service tests in the roughest kind of weather will determine whether the automobiles have reached the real standard, but to be candid with our readers it must be said that we believe most of the commercial vehicles now manufactured in America will make a creditable showing in the forthcoming endurance test.

Electric, gasoline and steam vehicles, omitting pleasure and passenger cabs and coaches from consideration, are now so common in New York City and the lesser cities of America that they no longer attract attention. The great department stores and the large daily newspapers use them almost exclusively for the delivering of their goods, and trucks that carry tons of weight are constantly in use. They have been working now in various sorts of weather, in torrid summer and icy winter, over rough pavements and smooth asphalt streets, with a degree of satisfaction that gives considerable confidence to the manufacturers who desire to have their machines tested over rough roads under the most adverse conditions to which they may ever be subjected. Automobiles are no less liable to breakage on rough roads than other vehicles, but some unofficial tests have shown that when controlled by experts they are superior to horse-drawn vehicles. The editor of THE AMERICAN EXPORTER last winter was invited to ride in a commercial automobile at a time when the pavements were covered with the ice that had formed after a wintry rain, when owners of valuable horses preferred to keep them in the stable unless they were freshly sharp-shod, and when traffic generally was carried on under annoying and harassing conditions. The machine was put through its paces, and with the exception of a short slide on an icy decline that was as smooth as glass, the auto did its duty quite as well as it would have done it on a dry summer day. The speed at no time was over eight miles an

hour, the limit in the part of the city where the work was done, although the machine had a speed of twelve miles an hour, and deliveries were made in the ordinary course of business that would have been very difficult to make on such a day with animal power. No special effort was made to do anything unusual on this occasion; newspaper advertising or notoriety was not sought, there were no preparations for the test—it was simply a chance invitation to see what the vehicle could do. It is almost unnecessary to say that our opinion of the capability of American automobile manufacturers was much greater than it had been, although our confidence in American inventors and manufacturers has never been questioned. We have frequently had occasion to mention new ideas in automobile construction, and we have from time to time noted improvements in the manufacture of the machines. We expect to tell our readers about many more improvements, for in America new men and new ideas are constantly springing up. Absolute perfection seems sometimes to be achieved in some field of endeavor, but the progress of the country is so rapid that many people wonder what the limit will be.

NEW REPUBLIC OF PANAMA.

A NEW nation has been born since our last issue, and a new government now controls the fifty-four-mile wide neck of land which connects the two great continents of the New World. The Republic of Panama was a State of the United States of Colombia until its recent revolt, which was due to the fact that the Colombian Government had pursued a course which threatened to deprive Panama from the benefits which would follow from American ownership of the Isthmian Canal. The revolt of Panama seems to have been the natural outcome of a policy on the part of the parent Government which would inevitably have been ruinous to the people who have created the new Republic. It was also to be expected, in view of the opposition of Colombia to accepting the liberal canal offers made by this country, that the United States would look with some degree of complacency upon any turn in the course of events which would simplify the accomplishment of the purpose of the United States to build a canal across the isthmus.

President Roosevelt, we believe, quite properly instructed the representatives of the American Government upon the isthmus "to recognize a de facto government, republican in form and without substantial opposition from its own people when established," and to take such steps as might seem necessary to protect American interests and preserve our treaty rights. The President, at the same time, urged that the Governments of Colombia and Panama should settle their differences peaceably, and he at once set in motion the armed forces of the United States to prevent the two lesser countries from going to war. Americans now own a railroad across the isthmus, and our Government is required by treaty provisions to prevent any interruption of its traffic, so that the new Republic enjoys a singular advantage in securing at the outset adequate protection from invasion by its enemy.

The new Republic can hardly hope to maintain its independence unaided, but it is so situated with reference to the Panama Canal, which must be protected by the United States, that it will have all of the moral support it needs. Panama has a population of 300,000, about the number of inhabitants to be found in a fair-sized American city. It is quite small for a nation, but it holds potentially the most important commercial and military point on the American Continent, subject, of course, to treaty rights that have been guaranteed to the United States. The Republic of Panama arises out of the necessities of its inhabitants, and the growing need of the world's commerce, which latter feature of the situation was not appreciated by the obstructionists who had control of the old Colombian Government. As we said in our September issue: No obstacle can prevent the construction of a canal across the Isthmus of Panama.

THE commerce of Panama amounts to only \$3,000,000 a year, but under the new conditions there ought to be a decided improvement in its scope and monetary value.

RUSSIA AND JAPAN.

WARLIKE notes, involving Russia and Japan, have been coming from the Far East for many weeks. Despite the strained relations which have been apparent between the two governments at frequent intervals since the controversy began, Americans have been of the opinion that all of the troubles between the two nations would be amicably settled by the arts and devices of diplomacy. At the time of making this comment on the situation in the Far East there seems to be no reason for believing that either of the governments will plunge into war, although it must be said that Japan seems dissatisfied with the progress of the negotiations which, it is feared, will not be terminated before the Japanese Parliament meets on December 5th, at which time the Japanese Government wishes to be able to make a report that it has reached an agreement with Russia. Our advice is that if the difficulty is not amicably adjusted before that time the opposition party will make an attack on the Japanese ministry and violently demand war with Russia, producing a condition which may develop a dangerous situation for international commerce in the Far East.

We believe that some of our Japanese friends are unduly hasty in attributing warlike intents to the Russian Government. Russia is not likely to go to war with any other nation except upon extreme provocation, and the delays in the negotiations may have been due, as reported, to the time required to enable the Czar to have personal knowledge of what is being done by the diplomats who are conducting the negotiations. Regarding the merits of the controversy we have no comment to make at this time, but we sincerely hope that the element in Japan which stands for war will be so greatly overshadowed by the power that makes for peace that there will be no outbreak. Russia's deliberation is believed in America to be due to a desire to avoid war, rather than to make preparations for it, and it seems quite certain that the Japanese Minister is also disposed to avoid strife. Minority elements in countries are rarely able to carry their grievances beyond the danger point, and it is to be hoped that current history, when it is written, will present no exception to the rule in this connection.

War between Russia and Japan over the subjects under controversy would not be considered entirely justifiable by the other nations of the world, at least not by Americans. The damage done would be chiefly sustained by the two countries concerned, but the commerce of the world would be affected. It would be idle to speculate upon the results, for we believe that common sense will govern the responsible heads of the governments of both countries and that neither will enter a conflict that can only be costly, unsatisfactory and without substantial profit at the end. Unless we are greatly mistaken in our estimate of the metal caliber of the diplomats of Japan and Russia, it is safe to say that there will be no war.

STEEL PASSENGER CARS.

FREIGHT cars built entirely of steel are so numerous now in the United States that the *Electrical Review* thinks our railroad managers might profitably go a step further, for it asks in a recent issue: "Why not build passenger cars of steel?" Our contemporary ought to know that steel now enters to a greater proportion in the construction of passenger coaches than is generally known, and no doubt the metal will be utilized as far as possible, but all-steel passenger cars are not likely to meet with the same success as has been won by all-steel freight cars. The cars for the new electric passenger subway in New York City are not built entirely of metal, and it is believed to be impracticable to construct passenger cars in that way, but it is possible with the discoveries made in other directions in recent years to build substantial railway vehicles in part of metals, with such materials as asbestos and fireproof wood as a basis for the decorations.

Many passenger cars now in use on American railroads are built on a framework of steel, and some of the private passenger cars are so strong that nothing short of dynamite could disintegrate them. In the cars of the latter class the limit has been reached in the utilization of metal, unless all decorative effect aside from paint is aban-

doned. The public will scarcely consent to travel in vehicles that resemble the interior of a man-o'-war's bunk room, and there is now no railroad manager who would try the experiment, even if he were far removed from competitive lines of travel.

In the last five years the construction of American railroad cars has greatly improved. The surface trolley cars on many lines are more substantial than were the common passenger coaches on some of the steam railroads half a decade ago. The railroad managers generally are disposed to adopt improved methods of construction without unnecessary delay, but they are not disposed to seriously consider all-steel passenger cars until the metal workers can produce decorative effects that at present are confined only to hard woods and other materials.

STEEL GOING TO EUROPE.

CABLE reports show that there has been some agitation, with a tinge of alarm added, over the exportation of steel by the United States Steel Corporation, which was foreshadowed in the last issue of *THE AMERICAN EXPORTER*. The Associated Press, under date of November 15th, sends the following from London:

"The sale of 100,000 tons of steel by the American Steel Trust, delivery to be made at Liverpool at \$20 per ton, has caused much alarm in the Tees side district and in Leeds. The current price at Middlesbrough is \$25 a ton, and some operators say they will close their works rather than to meet this rate. At Barrow seven out of twelve blast furnaces have been closed, owing to the importation of American and German steel. This has necessitated the closing of a mine, the output of which, for twenty-nine years, has gone to make coke for Barrow steel works. The Germans have been for the last few years doing a large trade in sheet bars, and their shipments to South Wales for the year are expected reach 100,000 tons. They were in process of forming a trust, to be called the Semi-Manufactured Union, but this aggressive competition of America has upset their plans, as they cannot touch the American price."

Foreign readers of this paper have known for some time that the United States Steel Corporation had decided to reorganize its export department, and would make an effort to secure its proper share of the world's trade in its products. We have also given our readers sufficient information to show that the so-called European iron combination would never have enough cohesive force to interfere with its American competitors. To disinterested observers the present situation is certainly interesting. To those directly concerned it is of great importance, for the tide of interchange of steel and steel products seems to be drifting in favor of America. For quite some time the tendency has been toward changing the current of steel shipments, without going into details as to products, etc., and it seems that the movement eastward is now assuming substantial proportions.

AS noted in another column, a new era has dawned in the making of armor for warships, due to the discovery of Americans of a process which does not infringe upon the Krupp method, and which can be manufactured much more cheaply. The concern has received an order for 6,000 tons from the United States Government, and would have had the contract for the entire lot wanted—16,000 tons—if it could have delivered the plates in time. Some idea of the importance of this revolutionary move in the steel industry may be gathered from the fact that the Government would have saved over \$4,000,000 on the 16,000 tons if manufactured by the new process.

OUR trade with Mexico is increasing rapidly, the total now being approximately \$83,000,000 annually. Our largest item of export is iron and steel manufactures, including \$7,000,000 worth of machinery last year. All of which shows that our southern neighbor is sharing our own prosperity.

ADVOCATES of metal roofs for buildings have advanced a new argument in favor of this comparatively recent innovation, which is of considerable value if subsequence, experience and observation shall sustain the present claim that such roofs are absolute protection against lightning.

ART BY MACHINERY.

LABOR-**SAVING** machinery at various times within the last decade has apparently reached its full fruition, but from time to time new devices have come upon the market, and the persons who keep posted regarding the development in this field of inventive genius in America have long since ceased to be astonished by new machines that can do more and better work than can be done by artisans equipped with their old-fashioned tools. While it is not saying too much to call some of the products of American labor-saving machines pieces of artistic value, it is quite true that American inventors have not yet undertaken to replace the sculptor and the scenic artist with machines, except so far as lithographing and other printing processes are concerned. Some American color printers have produced prints on paper that for blending of colors and real artistic merit would deceive any but the most experienced art students and critics. Some of the work which appears in high-class American magazines is puzzling as to its source and means of production, even to experts who are not acquainted with the process used. Oil and water-color paintings are reproduced with an exactness and perfection that can only cause wonder. If anything, in the magazine to which we particularly refer, the prints seem to be better than the originals. In this line there does not seem to be any possibility of improvement. Hundreds of thousands of copies of an artist's creations can be printed in the same time that it takes him to make a picture, each copy as good, if not slightly better.

The newest thing in art labor-saving machines is described in another column. It is a machine that does the work of the sculptor, instead of that of the painter, and it seems strangely at variance with the eternal fitness of earthly affairs that the inventor should be of the race of Italy, where Art is first and Machinery last. It is not surprising that American inventors have not entered the lists in this direction. No doubt some of them have thought about some machine of the sort, but the American inventors who have been successful are intensely practical men, and they would rather produce something that would contribute to the advancement of trade and commerce than use their time in devising means to carve statues mechanically. Mechanics and the arts, the practical and the impractical, the worker and the dreamer, have all come closer together within the last few years, and some of the present-day necessities are the result—things that would have been considered luxuries not so many years ago.

The American newspaper of to-day, for instance, would have been impossible fifteen years ago. Typesetting machines, each one of which does the work that required the fingers of four or five compositors, have made possible larger and better newspapers. When typesetting machines were introduced the printers scoffed at the dreamer who thought he could make metal do the work that nearly everybody else believed to be impossible. The dreamer was not of the same sort of dreamers as the men who doubted and discredited him. The use of electricity for power and other purposes in the great American newspaper offices has reached very close to its full measure. The only thing that machinery cannot do is to supply the executive power to direct it. Many men are still required to get into print a large daily paper, but their movements all depend upon the will of a central authority—a man who may sit at his desk and with a word or two change the whole current of the work of the office. Half a dozen telephones are ready to echo the word or two, batteries of typesetting machines are ready to set the type, big presses in the basement start or stop as he directs—artists hasten to reduce photographs of events that have happened within the half hour into plates that can be printed an hour later. On an afternoon paper, where time is precious and the count is by seconds, not minutes, the bent and trend of mind of every one from the managing editor down to the boy who handles papers for delivery in the basement, is to save time. Their ideas run to practical inventions, rather than to artistic effects, and even the artists have to sacrifice art for quickness at times. The man who quietly directs all of these forces often suggests improvements to his assistants that are of value. Sometimes such suggestions have resulted in valuable patents, but the man who did the work has always been the beneficiary. The trend there, as elsewhere, runs more toward practical utility than toward art.

CANADA'S PROSPERITY.

ALL the world is interested in the future of the Dominion of Canada. We discussed it at some length in our last issue, but there are phases of the situation that we did not then touch upon which are of interest to all friends and advocates of commercial progress. We pointed out the improbability of a unification of the Union—as the United States is colloquially called—and the Dominion, for many years to come. Without reverting to or reiterating what we have otherwise said on Canada's future, we have given more attention recently to our northerly neighbor than before, and feel impelled to say something about the effect of the material rather than the political conditions prevailing in Canada. Our esteemed contemporary, the *Farm Implement News*, furnishes this information and comment, which agrees with our own recent observations:

"Apparently no country is now making greater progress toward wealth and commercial importance than Canada or British North America. Her natural resources are immense and rapidly becoming developed; extensive mineral regions are being profitably exploited and vast fields of rich agricultural lands are fast being settled upon and brought under cultivation by practical and intelligent farmers, largely emigrants from the United States. No people have been more ready to avail themselves of the advantages of new methods and improved machinery than the Canadians, for no people are more intelligent and progressive. Relatively to population, Canada is now the best foreign market for our agricultural implements, and were there no tariff barriers between, her trade would be worth much more to us than that of any other country. As it is, our sales to Canada are large and steadily increasing, in spite of the Canadian tariff and preferential duties for British products."

There is something about the climate of North America that seems to impart vigor to its inhabitants, and the progress which is being made by the residents of Canada is by no means surprising. The country, as our contemporary says, is rich in resources, and its inhabitants show their progressiveness by the fact that they disregard obstacles in procuring their agricultural machinery from the United States. There can be no doubt of the general prosperity which permeates the Dominion, nor can there be any doubt of the fact that its people are as contented on the whole as is consistent with a progressive, ambitious race. The trade relations between the two contiguous nations are bound to increase, despite tariff barriers, and eventually the interchange of trade will bring about reciprocal relations that the politicians now believe to be very remote. It is worthy of note that politicians are defeated at times, they die like other mortals and even governments are changed, but the march of human progress and sweep of trade and commerce go on with the irresistible force of an ocean tide, obstructed at times perhaps by a rock or a sunken vessel, annoyed but not seriously affected, nor more than momentarily retarded. Politicians who try to interfere with trade, or restrict it beyond due bounds, soon become the derelicts of civilization and there is none to mourn their fate.

EXPLORER PEARY, of the United States Navy, has written to ascertain if the German antarctic ship *Gauss* is for sale, presumably intending to purchase it if possible for the next North Pole expedition. If Peary discovers the Pole with the aid of a German ship it will be another of the German-American victories that have frequently occurred in connection with affairs in the United States and elsewhere.

DENMARK'S King has ruled for forty years. Alert, vigorous and thoughtful of the welfare of his people, King Christian is to be congratulated on his long and successful reign. American trade with the merchants of his domain has been increasing, and that alone is proof that the conditions prevailing in the Danish kingdom are progressive.

LAST month we mentioned the increased demand for American boots and shoes abroad. The renewed growth in this branch of our export trade gives promise that the industry will soon assume greater prominence than it has been accorded in some quarters.

AMERICANS INVADE AFRICA.

THE American invasion of Africa is attracting attention throughout the world, and some of its features are of more than ordinary interest. We have printed accounts of the bridge-building exploits of Americans on the Dark Continent, and we have frequently referred to the efforts made by our exporters to extend their trade in that portion of the world. Just now Abyssinia is the object of commercial attack, and the campaign is going forward with the approval of European nations that are interested in the kingdom. Several months ago an American engineer went to Abyssinia at the invitation of King Menelek to take charge of an expedition to explore the Blue Nile from its source to its junction with the White Nile at Khartoum. The object of the expedition was to open the Blue Nile to trade and to place interior Abyssinia in water communication with the Nile and all Mediterranean countries. As the opening of the Blue Nile to commerce was to turn Abyssinian trade into channels controlled by the British, the expedition was in high favor in England, and British officers went with the American engineer to the capital of Abyssinia.

More recently United States Consul Skinner has undertaken to penetrate Abyssinia from the other side—a French port on the Gulf of Aden. Consul Skinner carries an invitation to King Menelek to visit the American World's Fair next year, and is taking with him a fine assortment of American rifles and articles of American manufacture, despite which fact the French Government extended to him the courtesy of a special train in which to go to the Abyssinian capital. His goods were also passed in free of duty, and he was given more privileges than have been enjoyed by any other commercial traveler prospecting or operating in Africa. According to the information which we have at hand, the French Government did not know just what message Consul Skinner carried to the King of Abyssinia, but it realized that his mission would be to the advantage of trade carried on through French ports. Therefore it took a friendly attitude toward him that was very pleasing to Americans at home.

All of the Americans entering Abyssinia go there by invitation from, or with the approval of, the King, and it is possible they will be able to do for Abyssinian trade what the European nations have not yet been able to do. King Menelek, with his capital surrounded by the modern artillery which he captured from the Italians, and with his soldiers armed with rifles taken from the Italian army, is suspicious of Europeans. He has nothing to fear from Americans, and if those now in his kingdom and those who are going there succeed in developing the trade of the old monarchy our own interests will not suffer, while other nations will share in the benefits of larger markets.

Wherever Americans have gone in Africa their names are associated with exploration or peaceful exploitation of commerce. They are not seeking dominion and are not land grabbers, but they seem to be exercising as much influence in the Dark Continent as the representatives of any other commercial nation, which, while it is nothing more than ought to be expected, is at the same time very gratifying to American interests everywhere.

AMERICAN SUCCESS.

ALFRED MOSELY, who has been studying American methods for the last year or so, has come to the conclusion that "it is the public school system of the United States that makes the American nation supreme." To quote Mr. Mosely further: "One of the things that we have been impressed with is the fact that infinitely more money is expended in the United States than in England for school buildings and equipment. And another thing that made a marked impression on every member of the commission was the tremendous enthusiasm with which the teacher was imbued, besides which I should also like to mention the unquenchable thirst among the pupils for knowledge. Such a combination cannot fail to produce results that afford an uplift for the people and contribute to greater effectiveness in its industrial life. One can find nothing but admiration for such a public school system as this. It is, or ought to be, America's proudest boast. It is the secret of all the wonder-

ful things she has accomplished industrially as well as in other lines."

Mr. Mosely probably did not mean to ascribe all of the success of our nation to the public school system in the concrete expression which we have quoted, but it is not to be doubted that the provisions for elementary education in the United States are adequate. Mr. Mosely speaks of the enthusiasm of the teachers whom he has observed, and we must say we believe it is this spirit of enthusiasm which permeates the average American, young or old, that has as much to do with American success as anything. "Men cannot make bricks without straw," according to a trite saying, and no more can intelligent effort be put forth in developing crude ideas without a basis of education, but it is true in America that the foundation of education is within the reach of every child, whose parents do not offer objections, and in all except the really rural districts education is compulsory for children under 14 years of age. The free educational facilities are by no means limited to the elementary schools, for higher schools are open to the children who display willingness, if not eagerness, to learn more than the lower schools can teach them. The technical schools are also within easy reach of those who have ambition. In the matter of education, as in other things, the drones are weeded out as the educational process advances, but according to statistics that have recently been available, the percentage of the delinquents is becoming smaller as time and the world go on. The man in America who has no ambition is rare. When found in a search, one meets a failure. The man with ambition has enthusiasm, except in equally rare cases. Sometimes a man with ambition but without enthusiasm may succeed, but such an individual is almost as rare as the one without ambition. Enthusiasm and interest in a man's work enables the toiler, whether he be doing intellectual or manual labor, to make play of his task and feel that he is not a "slave to capital" or the victim of "a cruel taskmaster." Mr. Mosely has probably found the foundation for American success, but he has only incidentally noticed the real and cumulative cause.

MARINE data regarding the economy and endurance of the turbine system of propulsion is so meager that the Cunard Turbine Commission has determined to enter upon a series of exhaustive practical tests between two steamships, practically alike, except that one will be a twin-screw steamboat and the other a turbine vessel. The boats chosen are high types of the work of their respective builders, and both are to be thoroughly tested by the commissioners. The water consumed will be weighed, so that it will be possible to arrive at a close approximation of the relative steam consumption of the turbine and reciprocating engines in driving the vessels at the same speed in a given displacement. It is expected that important additions to the present small fund of information concerning marine turbine engines will also result from the forthcoming tests of the new British cruiser *Amethyst*, which was recently launched. The *Amethyst* is equipped with two sets of turbines, one for high speed and the other for low speed—something entirely new in the way of equipment.

SOME novel features concerning the ownership of railroads in the United States are presented in a recent bunch of statistics. It appears that 1,600,000 persons own the railroads and that they, with the employees, receive two-thirds of the gross receipts of the companies. The other third goes for fuel, taxes, supplies and equipment. No doubt our foreign readers will be surprised to learn that railroad ownership in this country is so widely distributed.

IT is gratifying to record elsewhere that improvements are being made in the transportation of mails between the United States and Great Britain. Under the new arrangement business men in the United States can depend upon the prompt despatch of their letters to European destinations.

THE tin mines of Cornwall are safe. There will be no "invasion," as the American capitalists have concluded the royalties demanded are excessive. As a matter of interest, it may be said that the American tin industry is in very good shape.

FASTER MAILS TO EUROPE.

United States Adopts Better Methods for International Communication.

THE heaviest and most important international mails in the world are those between New York and London, and as the largest and swiftest steamships in the world are those plying on the great Atlantic highway, the mail service, judged by any standard of the past, is highly efficient. It is a peculiar fact, however, that the mail traversing eastward across the Atlantic—that is, from the United States to Great Britain—makes better time than that traveling in the opposite direction. This discrepancy is due not to quicker voyages in one direction, but to the difference between the British and American way of handling this particular branch of public business, according to a writer who has studied the subject.

It is obvious that the efficiency of the ocean mail service depends on two things—the speed of the mails in transit and the frequency with which they are despatched. The second factor is fully as important as the first, for it is evident that three sailings a week of seven or eight day boats would give a better service than one sailing of a five-day boat, since two-thirds of the mails would reach their destination more quickly.

A letter mailed in London on Wednesday is compelled to wait until Saturday before it starts on its journey overseas, and one mailed on Saturday is delayed until Wednesday. It is true that when envelopes are marked "via American packet" letters will be sent on the American line from Southampton, but comparatively few people will take the trouble to study the sailing schedules and to provide this special direction.

The English papers have frequently criticized this system of sacrificing the convenience of the business world to the profit of British steamship companies, and the London *Express* recently published a table showing that the post-office authorities frequently sacrificed a day or even two by sending mails by such ships as the Saxon and Ivernia, when one of the crack American liners, as for example, the St. Louis or St. Paul, was sailing on the same day. Striking illustrations of this delay have been afforded frequently when freight despatched by the American line has been discharged in New York and the ship that brought it has reloaded and sailed for Southampton again before the bills of lading for the import cargo have arrived by a slower British boat.

If the United States were to follow the British system it would ship all its mail by the vessels of the American line, which provides weekly sailings from New York to Southampton. So far from doing this, however, Uncle Sam invariably sends out his mail by the best available boats. The result is that mail is despatched from New York five times a week instead of twice as from England; and if a six-day boat is sailing on the same day with a nine-day boat the former carries the mail, which is again in strong contrast to the English system.

The United States authorities have undertaken to facilitate the movement of ocean mails by the establishment of sea post-offices on certain steamers in which postal clerks sort the letters and make them up in convenient packages as is done on railway mail cars. The British Post-Office never has joined in this effort, although the work of the sea post-offices frequently means a gain of from six to eight hours, sometimes even more, in the delivery of a letter.

As a further improvement in this direction the United States officials of the Post-Office have just arranged with the American line to change its sailing day, so that hereafter its ships leave New York on Saturdays instead of Wednesdays. At the same time the White Star line, which has its sailings on Wednesdays, will establish sea post-offices on its ships. As a result, the Wednesday mails will be handled as expeditiously as formerly, while there will be a decided gain in the Saturday mails. Heretofore these have been sent on the Cunard line via Liverpool, and the London letters have not been distributed until a week from the following Monday morning, as there is no distribution in London on Sundays. Under the new plan the London mail will reach its destination Saturday afternoons, and there will be a gain of from thirty to thirty-six hours in delivering a large part of the mail for all British ports.

Some idea of the tremendous extent of the commercial importance of this ocean mail business may be gained from the fact that last year the foreign branch of the New York Post-Office handled over 100,000,000 pieces of mail. This does not include the "closed mails" which pass through the office in transit from such cities as Chicago, St. Louis and San Francisco and from foreign countries like Mexico, Japan and Australia. Altogether from 5,000 to 7,000 bags of mail leave New York for Europe every week, and when one considers that each bag contains from 4,000 to 5,000 letters and from 200 to 400 papers it will be seen that the international exchange of ideas foots up an enormous total of business in the course of a year.

The New York *Herald* reports that honors were about equally divided between the trans-Atlantic liner St. Louis and the Campania in the ocean mail-carrying race, which ended on November 21st. The St. Louis mail reached London at four minutes past 10 o'clock, while that of the Campania reached London twenty-four minutes later. Only the Irish mail was landed by the Campania at Queenstown, as, owing to the small portion of her mail which was directed to London, the postal authorities had decided not to run the usual express service from that port to the metropolis.

The Campania reached Queenstown at twenty-one minutes to 3 P. M. on November 20th, after a passage of 5 days, 16 hours and 55 minutes, having left New York at 5 o'clock on the Saturday afternoon before. The St. Louis left

New York at twenty-three minutes to 12 A. M. the same day. The Campania arrived at Liverpool November 20th in time to despatch the London mail at thirty-four minutes past 5 A. M., while the St. Louis reached Southampton an hour later. Both mails were distributed at a quarter past 12 o'clock in the afternoon. Some disappointment was expressed in various quarters that the special express from Queenstown was not run, thus preventing a test under conditions that had previously existed, as it is asserted that the Campania's mails could thereby have been distributed in London by the first post in the morning.

British Study Our Methods at Niagara.

LITTLE has been said about the arrival in this country of Sir Charles Metcalfe, consulting railroad engineer of the British South Africa Company, and J. F. Jones, manager and secretary of the company, who have come from England on a special mission. The Cape to Cairo railroad is drawing nearer every day to Victoria Falls, the famous waterfalls in the Zambesi River. It is intended to utilize this water power to generate electricity for service in the coal mines only a few miles away and for other purposes. The principal purpose of our visitors is to go to Niagara Falls to inquire into the methods of transmission of power there and to collect information that may be useful in the effort to turn the immense energy of Victoria Falls to good account.

The meeting of the British Association in 1905 is to be held at Victoria Falls, and the South Africa Company intend to expend about \$35,000 to give the members a free trip and to entertain them comfortably at the falls. England's men of science will see there one of the wonders of the world.

The broad Zambesi suddenly seems to vanish into the bowels of the earth. Ages ago a wide crack was opened from bank to bank in the hard basaltic rock, and the great river suddenly disappears in the narrow, rocky chasm. At the bottom of this deep rift in the rock the engulfed waters emerge through a narrow gully on the left, which is thirty-six times narrower than the river above the falls. Any geologist would jump at the opportunity to study this remarkable freak of nature. The effort is to be made to put in at least a part of the electricity plant before the British scientific men arrive on the ground.

Livingstone's prediction with regard to these falls and the surrounding region is coming true. He believed, when he discovered Victoria Falls, nearly fifty years ago, that the region thereabouts was marked for special development. He saw water power, coal, abundant vegetable products, cattle, intelligent, though barbarous, natives, and other elements of material progress. He said in one of his books that the world would utilize this region some day, and his prediction is coming true.

Germans to Study American Methods.

THE German Colonial Society has started a project to educate the youth of that country in the practical way that prevails in America. The society, we learn, contemplates sending a number of young men to Texas agricultural and technical schools to study the methods of growing and marketing cotton. The young men will spend a year on a cotton plantation and so acquire practical experience, which they will later employ in the German colonies. The students will sign a contract to spend a number of years in the service of the German Colonial Society for the purpose of introducing the growing of cotton after the American system. The enterprise is the outgrowth of a suggestion by the German Consul at Galveston, who undertakes to make the arrangements for the preparation of the students.

The society has just sent a Texan named Becker to Dar-Es-Salaam, in German East Africa, who will be the first American cotton expert to arrive there. The latest reports from German East Africa indicate that interest in cotton growing is spreading, and that in many new communities are engaging in the industry. The crop this year will be the largest known there. Expert Becker's work will consist principally in finding new localities adapted for the growing of cotton. The Colonial Society points to recent speculation in the American market as a reason for seeking to, if possible, make Germany independent of the American supply.

Novel Bath-Tub for Invalids.—An American woman has invented a bath-tub for invalids that has some novel features. It consists of a waterproof sheet, with a surrounding air-tight tube, which can be inflated to form a raised wall around the edges of the sheet high enough to contain a considerable amount of water. When the tubes are deflated it is comparatively easy to roll or lift the patient on to the sheet, as the tubes lie flat on the bed. After the inflation is completed the water can be poured in, or a line of hose can be connected with the hot-water faucet in the bath-room or wash-bowl to fill the tub to the desired height. After the bath, the water is drained off through a short section of hose beneath the pneumatic tubing.

British Fraternal Delegates.—William Mullen and James O'Grady, the British fraternal delegates to the Boston convention, recently arrived to attend the convention of the American Federation of Labor. For ten years it has been the brotherly habit of the American and British organized workers to send delegates to one another's conventions.

NEW ERA IN MAKING ARMOR.

American Concern Will Build \$2,000,000 Plant and Use New Process of Manufacture.

THE recent award of a contract for 6,000 tons of armor for new American battleships to the Midvale Steel Works will result in the construction of a new plant at a cost of \$2,000,000 and the probable cheapening of armor in the world's market. The total amount of armor needed for our new warships is 16,000 tons, and the Midvale company offered to take the contract at a saving of hundreds of thousands of dollars to the Government. There was some doubt as to the ability of the company to furnish the entire lot in time, so the contract was divided, the remaining 10,000 tons going to other companies.

An entirely new process will be used by the company and the cost of manufacture will be greatly reduced. The bids of the old companies, which have heretofore had a monopoly in the manufacture of armor, have averaged about \$429 a ton, beside which the Government was compelled to pay \$221 a ton royalty on the Krupp process, bringing the total cost up to \$650 a ton, the limit fixed by the Federal authorities. The monopoly caused members of Congress and others to agitate the question of the Government building its own armor plant, as it was demonstrated that armor to stand the test could be made at a much lower figure. Nothing was ever done, and the Steel Trust continued to make all the armor needed in the construction of warships, receiving the limit price for its output.

But a great saving has been accomplished by giving the contract for 6,000 tons of armor plate to the Midvale Company, which is independent of the trust in every sense of the word. It was said last month that its entry into the field would mean a still greater reduction in the price of armor plate in the future. The Midvale Company, it was confidently said by a man in a position to know, could, with the new process it has perfected, make armor cheaper and in the same time as the Bethlehem or Carnegie concerns. In face of the fact that heretofore the Krupp armor in Class A has been the only process to stand the Government test, the award is looked upon as a great victory for the Midvale concern, even not considering the saving in money.

At the same time the bids were opened it was shown on the aggregate proposal that in awarding the whole contract to the Midvale Company the saving would be in the neighborhood of \$850,000 on about \$7,000,000 worth of work, there being approximately 16,000 tons to be delivered. But in further analyzing the figures it is shown that the total saving will amount to much more than this.

This is shown, for instance, by taking the contract awarded the Midvale concern, amounting to 6,000 tons. At the price for Class A Krupp armor asked by the Bethlehem and Carnegie companies the Government would be compelled to pay the trust \$429 a ton, in addition to paying \$221 a ton royalty for the use of the Krupp process. This would bring the total cost of 6,000 tons to \$3,900,000. At the price bid by the Midvale Company—\$398 a ton for Class A armor, minus the \$221 which the Government will not be made to pay for the Krupp royalty, which makes \$177 a ton—the price would be \$1,132,000.

The difference between the high bid of the Carnegie and Bethlehem companies of \$429 a ton and the Midvale bid of \$177 a ton is \$252. The saving on 16,000 tons of armor therefore would be \$4,032,000.

The improvements in armor-making are not confined to the United States. By the new Krupp process armor for naval ships the outside of the plate is so hardened that a chip from it would cut glass like a diamond, while at the same time the inside affords a high degree of toughness and solidity. An advantage of the new hardening process is that it enables armor plate to be made much thinner than formerly. The heaviest Krupp plate for battleships is not more than 12 inches in thickness, as against 24 inches ten years ago.

Will Be Largest Organ in the World.

ADVANCE in the construction of musical instruments in America will be one of the features of the World's Fair next year in St. Louis, U. S. A.

The chief exhibit will be the largest organ in the world. It is an instrument capable of producing 17,179,869,183 distinct tonal effects—a continuous performance that would last 32,600 years if a different one of these combinations were drawn every minute in those centuries of time. The impressiveness of its proportions and its overpowering volume of sound are the least of its achievements in the realm of instrumental music. Effects never heard outside the grand orchestra until the manufacture of this colossal organ places its expressive powers far in advance of other instruments. All of the wood-wind instruments of this full band are contained within its compass.

Large as a brick block—62 feet long, 40 feet high and 33 feet wide, and possessing 140 stops, 239 movements and 10,059 pipes—it overshadows the most famous instruments in Christendom. It cost, approximately, \$100,000. The two pipes drawing the lowest tones are each 32 feet long; two good-sized men, side by side, or a small pony, can pass through them. A train of ten cars is needed to transport the monster from Los Angeles, Cal., to St. Louis, Mo.

Five separate organs are combined within this enormous mass of enginery—electrical mechanism and wind pressure; the first or great organ, the second or

choir organ, the third or swell organ, the fourth or solo organ and the fifth or echo organ. The echo organ is 18 feet wide, 17 feet high and 10 feet deep. It has a special bellows 12 feet long by 4 feet wide, operated by a motor of 1½ horse-power. Five organs can be automatically played at one time by a double-roll, self-performing attachment on a separate console or key desk. This arrangement draws out the tremendous power and beauty of the five organs—a feat utterly beyond the range of human fingers.

A movable console or key desk, the only one in the United States, serves the organist in playing the great organ. His fingers must command five manuals or keyboards, making a flight of five stairs. This console, which is movable, is connected to the organ by an electric cable 150 feet long. When seated before the instrument, the musician must dominate the five manual stairs, the 140 draw-stop knobs, 5 tremolant draws and 36 couple draws, the 46 push-buttons belonging to the adjustable combination system and all the feet levers controlling the expressive powers of the whole organ. The second or self-playing console is stationary. Through the agency of the stationary key desk the greatest symphony orchestra scores can be played without having to reduce the scope of the composition to bring it within the range of human fingers.

The most sudden and subtle changes of tonality are instantly commanded by the double touch. A slightly increased pressure on the keys by the fingers of the player will add the voices of any stops drawn from the expressive division of the instrument—an addition that can be made to any note or group of notes under the fingers. It is a mechanical expedient obtained in no existing organ in the United States and in no first-class concert organ in the world.

The only organ in the world that even approaches this one is the immense instrument in the Town Hall at Sydney, New South Wales, the masterpiece of famous English builders. The Australian giant has 128 stops, as compared with the 140 stops of the World's Fair champion. The next organs in rank are those in the Cathedral at Riga, Russia; Albert Hall, London; Garden City, L. I.; Chicago Auditorium; Leeds Town Hall, England; Seville, Spain; St. Sulpice, Paris; St. George's Hall, Liverpool, and Ulm Cathedral.

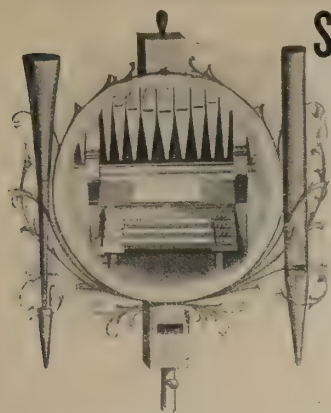
The New Commercial Treaty with China.

MAILS from China last month brought the text of the treaty signed at Shanghai on October 8th by the representatives of the United States on the one side and those of the Emperor of China on the other. While it follows, like its predecessors, the general lines of the convention previously concluded with Great Britain, there are some important points of difference between the two treaties which will interest merchants engaged in commerce between the two countries. It is, for example, not without significance that the first article of the American treaty provides that the diplomatic representative of the United States in China "shall be given audience of His Majesty the Emperor whenever necessary to present his letters of credence or any communication from the President of the United States. At all such times he shall be received in a place and in a manner befitting his high position." This insistence on the place of the Emperor as the real head of the Government will be hailed by every reformer in China as a valuable aid to the cause of progress, according to the *New York Journal of Commerce*. Equally significant is the provision made in Article II that the consular officers appointed by the United States "shall hold direct official intercourse and correspondence with the local officers of the Chinese Government within their consular districts, either personally or in writing as the case may require, on terms of equality and reciprocal respect."

The sections of the American treaty which relate to customs duties exclude a good deal of matter relating to Chinese internal taxation which finds a place in the British treaty, but are otherwise virtually identical in their provisions. That is to say, in return for the abolition of all offices, stations and barriers of whatsoever kind for collecting likin, duties or such like dues on goods in transit, the Government of the United States consents to the payment of a surtax, in addition to the effective 5 per cent. import duty, of one and one-half times the amount of this duty.

American Sewing Machines in Japan.—The German press, in commenting on the sewing-machine trade in Japan, points out that the importation of American sewing machines into Japan has increased elevenfold over that of Germany since 1893, although the American machines command much higher prices than those made in Germany. The reason for this is said to be good management of American companies in their business methods, such as establishing depots and agencies all over Japan, keeping branches, where all parts of the machines can be obtained in the chief business centers; selling on the instalment plan to private persons and sending salesmen to every town and village.

Agricultural Machinery Catalogues Wanted.—Considerable interest is manifested in American agricultural implements by the Agricultural College of the Republic of Paraguay. This is the only school of agriculture in the country and is supported entirely by the Government. It has quite a number of students who make agriculture a study scientifically and practically. The director of the institution is Moises S. Bertoni, who would like to receive catalogues from American manufacturers of agricultural machinery.



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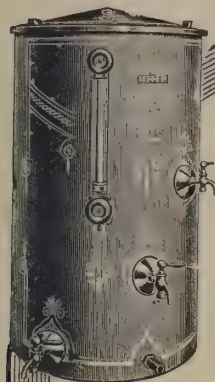
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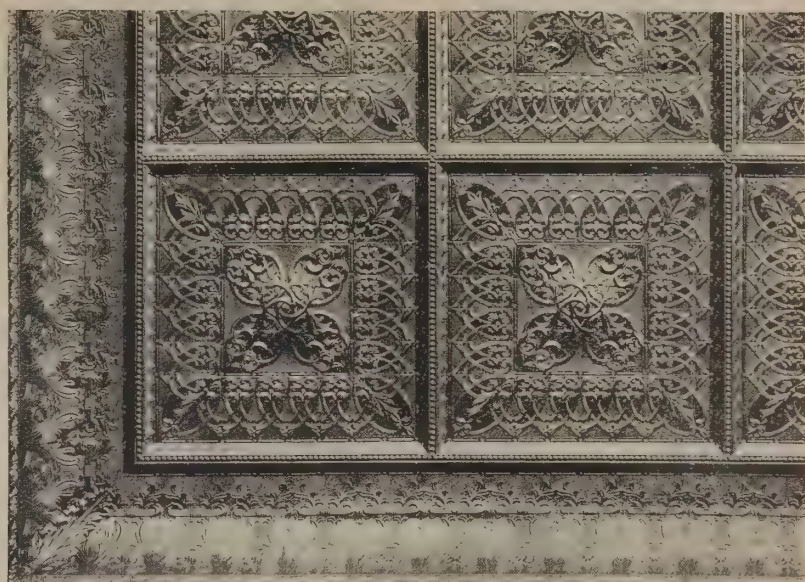
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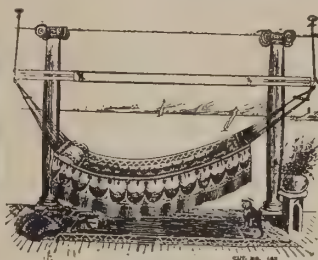


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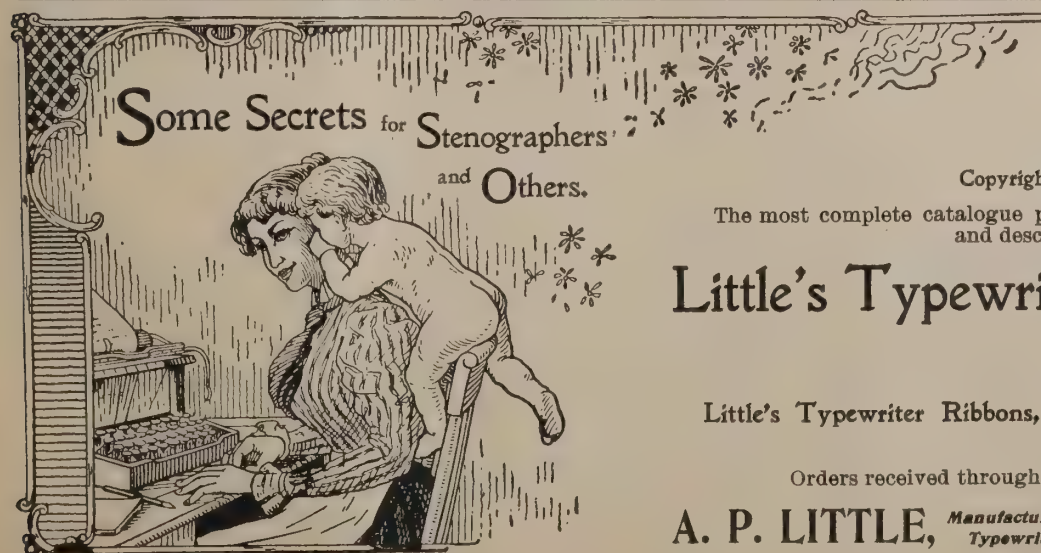
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WILL BANISH LOCOMOTIVES.

Three Hundred Electric Motors and \$20,000,000 Worth of Equipment Ordered.

SEVERAL months ago we published some account regarding the plans of the New York Central Railroad Company to do away with the steam locomotives for its heavy trains running into almost the center of New York City. A contract has now been awarded for the electric equipment. From independent sources was learned that the contract means that within five years no passenger trains on the New York Central and New Haven lines will be hauled by steam locomotives within a radius of fifty miles from the Grand Central Station; that the entire outlying country will be brought into close touch with the business part of the city, and that the general adaptation of that motive power for railroads will be brought within the range of possibility and probability.

The power will be furnished by two immense power houses. The distribution of the power will be achieved by a number of substations. The power houses will be fitted with Curtis steam turbines. The largest size of these engines so far built is 7,500 horse-power. The engines for the New York Central power houses will probably be of still greater horse-power.

The engines which will be built for the New York Central will resemble in outward design those now in use on the Baltimore & Ohio, which have been described in *THE AMERICAN EXPORTER*, but they will be different in interior construction, as the Baltimore and Ohio engines are required to develop a speed of only ten miles an hour, while the New York Central engines will have to be able to run at sixty miles an hour. Steam engines of the standard class of the New York Central indicate, when running at sixty miles an hour, a test of 1,400 to 1,500 horse-power. The electric engines will have about 1,800 horse-power.

The appearance of the locomotive will be like a rectangle cabin built on wheels. There will be doors on either side and at both ends, permitting of easy communication should two locomotives be coupled together. There will be enough windows to afford an unobstructed view to the engine driver. The lever, which will have to be pressed down in order to apply the power, is so connected with the brakes that in case of accident to the driver its release will automatically put on the brakes, as well as shut off the power. This is said to be a new feature, intended to assure the safety of the passengers.

It is expected that the running of these trains by electricity will result in a tremendous saving, not only in fuel, but in efficiency. It will also result in a largely increased passenger traffic. The cost of the power houses, substations, equipment and locomotives necessary is conservatively estimated at between \$15,000,000 and \$20,000,000. As there are between 600 and 700 trains running every day in and out of the Grand Central Station, at least 300 electrical locomotives will be required. The passenger traffic of the New York Central at present requires 547 steam locomotives.

Engines Without Boilers Now Promised.

THE world of mechanics is to be "revolutionized" again very soon, if a story from South Bend, Ind., proves true. The inventor is F. S. Smith, and this is what his friends claim for it: "In future engines will not require boilers to generate steam. Instead they will be supplied with the steam generator—an improvement over anything in its line that the world has ever seen. Smith's invention has been completed within the last two months, and the United States Patent-Office has allowed seventeen out of nineteen claims made by the inventor. The invention is the work of four years. Every expert who has seen the generator tested is enthusiastic in declaring the principle to be the leading mechanical discovery of the century. The greatest advantages claimed for the invention are that it is non-exploding, and that it is simple to operate. In the instantaneous vaporization of water, whereby the fluid is immediately flashed into steam, the generator has decided advantages over the present steam engine. In contrast with boilers, the invention does away with safety valves, steam gauges and water-glasses. There is no storage of steam, as every ounce is used as fast as it is generated. Another advantage over the boiler is that Smith's device is compact and requires less than half the amount of space. A great saving in the amount of fuel is promised."

If Mr. Smith's invention is really what is claimed for it our readers will be duly apprised of the fact. His press agent is so enthusiastic that one is inclined to ask why he did not make his claim stronger by cutting out the necessity for any fuel at all. If there is any real merit in Mr. Smith's invention, however, it is likely to be discovered, despite the handicap which has been imposed by his press agent.

Progress of American Turbine Engines.

W. L. R. EMMETT read a paper on "Recent Steam Turbine Developments" at the Saratoga meeting of the American Street Railway Association. One of our leading electrical machine manufacturing companies has been experimenting for several years with a modification of the Parson steam turbine suggested by Mr. Curtis. A 600-kilowatt machine was constructed for use in its works, and proved so satisfactory that it was decided to apply the principle to an engine of the largest size, and the construction of a

5,000-kilowatt machine was undertaken. This engine is now installed in the works of the Commonwealth Electric Company of Chicago, and, while it had not been completely tested at the date of Mr. Emmett's address, sufficient data had been obtained for him to pronounce it an unqualified success. The turbine and electric generator together weigh about 40,000 pounds. The shaft is vertical, and the whole machine complete forms a cylinder about 25 feet high and 14 feet in diameter. Another one of these vertical shaft machines (of 500-kilowatt capacity) is installed at the works of the Newport and Fall River Street Railway Company. Mr. Emmett stated that the manufacturers now had contracts aggregating more than 200,000 kilowatts of steam turbine engines. During the discussion which followed Mr. Emmett's address it was stated that some of the best engineers in the country are still skeptical regarding the practical value of the steam turbine, and the gas engine was cited as a dangerous competitor, even if the best results claimed for the steam turbine are realized in practice. What was said as to the gas engine applies also to gasoline and hot-air engines.

Era of Trackless Trolley Cars Near at Hand.

THE following very interesting article is found in *Motor*, a magazine devoted to the interests of automobiles and their users: "Almost unnoticed, there is stealing upon us a development so important in the field of land transportation that it may soon supersede systems of vehicular traffic, themselves of recent origin, which we have come to regard as necessary and permanent features of modern civilization. I refer to the 'trackless trolley,' which, perhaps, may be best described as a cross between the automobile and the electric car.

"The thorough practicability of this new system, which consists simply of electric vehicles operating without rails, but deriving current from overhead wires, is well established. In the United States lines are planned for several sections of New England. Economy of operation and absence of rails are the principal advantages claimed for the new system. This explains the large profit that the trackless trolley has invariably shown under traffic that could not even pay interest on a rail-laid line.

"Being relieved of the necessity of carrying heavy storage batteries, an electric omnibus can be surprisingly light and yet have ample power to surmount the stiffest grades under heavy loads. The power question thus settled, the only other respect in which the expense of maintenance differs materially from that of rail-carried electric cars is in the matter of tires. With so ample a power reserve, however, and with proper springing, tires of high tractive efficiency and resiliency become of minor importance, and the expensive and short-lived pneumatic can be discarded—solid-rubber, or even iron, tires being substituted."

Pneumatic Frames vs. Air Tires for Autos.

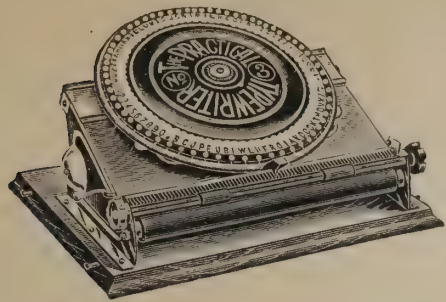
IN seeking the solution of the eternal problem presented by pneumatic tires, an automobile with a frame cushioned by compressed air and oil combined in cylinders fitted to the body has been evolved. Jointed levers carry the jar of all impact from the axle to pistons, which work in these cylinders similarly to the pneumatic door closers, only a series of ingeniously arranged valves for the oil and compressed air within take the place of springs in taking up the reactionary movements of the air-cushion on the piston. The pistons are fitted horizontally to the frame, two in front and one in the rear, and the car is equipped with solid rubber tires.

The roughnesses of the road are not overcome at the place of contact as in the case of the pneumatic tires, but they are overcome and the expense of annoyance of punctured and bursted tires saved. Moreover, there is a great saving on the wear and tear of the springs of the car and on the frame. This was all adequately demonstrated in a trial trip of the car recently, when a party of New York investigators were taken for a ride over some of the cobblestone pavements in the suburbs. So far as the passengers were concerned, the riding was as easy as if the car had been fitted with pneumatic tires on the wheels instead of pneumatic cylinders on the frame.

German Professor on Turbines.—Advice received in the United States chronicle the fact that at a meeting of the German Society of Naval Architects at Charlottenburg recently Professor Reidle delivered an address on turbine steam engines, the invention of which, he said, was of the greatest technical and economic significance. He believed that the turbine engine was destined to produce the greatest revolution in the application of steam since the steam engine was invented. Germany, he said, was unfortunately behindhand in adopting the turbine, and he added that it will require at least two years of the hardest work to overtake those other countries which had adopted it.

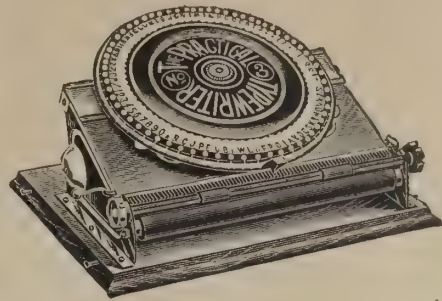
American Locomotives for China.—Three locomotives now being built by the American Locomotive Company and twenty passenger cars under construction by the American Car and Foundry Company are to be shipped to China by the American Asiatic Steamship Company's Braemar, scheduled to sail December 15th. The locomotives, etc., are for use on the Hankow-Canton Railroad, now being built by the American-China Development Company.

Steel Rails to Korea.—The International Mercantile Agency reports: "A feature in industrial lines is the sale of 10,000 tons of Southern pig iron for export to Manchester at \$10 or less a ton at the furnace and a Pittsburgh sale of American steel rails for delivery in Korea."



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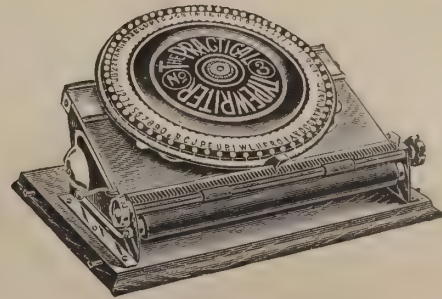
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Insisted on Having American Equipment.

THE Tramways Committee of Brighton—one of the most popular South of England seaside resorts—which has from time to time placed contracts for various American electrical equipment, recently disqualified a tender of the British Brush Engineering Company, on the ground that the company has not complied with the specification regarding trucks to be used on the Brighton electric traction system. The Brighton engineer specified for trucks built by one of two concerns in the United States. The Brush people being publicly invited to tender offered to supply trucks constructed at their own works at Loughborough, one of the suburbs of the British metropolis. Not being in accordance with the specification the Brush bid was thrown out. The action of the Brighton Tramways Committee, according to advices just to hand from the other side, has created no little excitement in the British electrical trade. The employees of the electric traction department of the Brush Company passed the following resolutions at a special meeting:

"1. That this meeting, having heard that in several towns it is the custom to exclude British firms from putting in tenders for trucks in competition with foreign makers, respectfully appeals to members of tramway committees and other buyers of cars to give fair play to an industry on which the welfare of so many of their countrymen, not only ourselves and our families, but other workers concerned in the preparation of the material, is absolutely dependent.

"2. That, while having no right or wish to interfere with the actual placing of orders, we urge that in our own country it is unjust that British truck-makers should be barred from opportunities of selling goods which are the product of British labor.

"3. That we protest against any suggestion that foreigners can claim superiority or even equality in any branch of steel work, and we are confident that, with fair and open competition, foreign-made electric traction trucks would soon fail to find any market whatever in this country, and that employment would then be provided for a large number of additional men in this industry."

The incident is interesting as showing the faith that many British purchasers have in the excellence of articles manufactured in the United States and the spirit shown by British workmen in resenting the decision of the purchasing powers. No further comment seems to be necessary.

Peculiarities of an American Inventor.

THE *Implement Age* gravely prints the following about Thomas A. Edison, the eminent American inventor: "He often passes ten or twelve hours at a time in a room from which every ray of light has been excluded. He told the writer that he (*sic*) is so accustomed to doing so, that now, after he has been in the dark room several hours, objects are as distinctly visible to him there as they are ordinarily in the daylight out of doors." Our contemporary also quotes the inventor as follows:

"After I have been in the dark room ten hours or more, I can see to read ordinary print without any other light than that which sifts through solid wood and walls, or emanates from the body. It is wonderful how supersensitive the eyes will become. Prisoners who are locked away for years in utter darkness can see things there as readily as you or I can in the sunlight."

Mr. Edison is so deaf that the discharge of a cannon alongside of him would produce little effect, if any. He is so busy that he does not bother with newspaper people, and when they go to him for stories, after they have shouted their questions into his ear-trumpet several times, in a louder key each successive time, Mr. Edison will say either: "Well, what of it?" or "Who told you so?" If the scribe does not take the hint Mr. Edison becomes so absorbed in other things that his visitor finally melts away. When Mr. Edison has anything to say he writes out a carefully prepared statement and has it published. It is always concise, rational and logical. Up to date he has made no claim to being able to see in the dark, and none of his friends has accused him of remaining in a dark room for ten or twelve hours a day for any purpose. In fact, most of the newspaper stories about Mr. Edison are pure invention, without any merit whatever. Mr. Edison never affirms nor denies a story about him, and for that reason many equally improbable yarns have been printed about him and his plans. Knowledge of this fact has caused THE AMERICAN EXPORTER to exclude from its columns some very interesting but obviously untrue stories relating to Mr. Edison.

Great Stone Cork for Destructive Volcano.

EVERYBODY remembers the destruction of St. Pierre, the chief city of Martinique, in the volcanic eruption of Mt. Pelée on May 8th of last year. Now it appears that an enormous obelisk is being extruded like a yielding cork from the crater of Mt. Pelée. Professor Heilprin of the University of Pennsylvania, U. S. A., has the following to say about it: "Not the least remarkable of the many extraordinary conditions that have been associated with the recent eruptions of the Martinique volcano is the extrusion of the giant tower of rock—a veritable obelisk—which now dominates the mountain, and which has given to it an added height of 800 to 900 feet. This tower of rock issues directly from the summit of the new cone of the volcano to a height of 1,600 feet or more, and virtually plugs it. Where it is implanted it has a thickness of some 300 to 350 feet. From certain points of view the obelisk seems to maintain for most of its height (800 plus feet) a fairly uni-

form thickness; from other points it shows a rapidly tapering surface. In eight days preceding June 7th this growth was, as we have been informed by M. Giraud, 33 feet, and in the four days preceding June 15th (a period within the time of my recent visit to the volcano) it measured 20 feet. The consideration of the depth to which this giant monument descends solid into the volcano would be interesting were there any way of reaching the problem. I noted a feeble line of steam issuing from the absolute apex of the summit, suggesting a continuous passage or channel extending from the base to summit. On March 26th a discharge of incandescent balls was observed also to take place from the same position."

Novel Features of a New Window Shade.

THERE are many cases where it is desirable at times to have a window shade capable of an adjustment whereby the lower part of the window may be screened off and the light allowed to enter through the upper part and at the same time permit of the usual adjustment. Many efforts have been made to arrive at this, but the process has, as a rule, been of such a cumbersome character as to make them almost impractical. An exceedingly simple solution of the matter appears in a shade which has been recently introduced in America and which dispenses with the roller entirely, says the *Philadelphia Record*. This is done by making the shade in three pieces and suspending them in such a novel manner that the admission of light is almost under absolute control. In a general way the position of the three parts is regulated by a cord which is passed through a ring at the top of the window frame and then across to the side, where it passes downward to some point of fastening within easy reach. This controls the raising and lowering of the three parts, as stated. The middle portion remains at any point to which it has been drawn by this cord, while the other two parts are hung with such relation to each other that as one is drawn down the other is raised correspondingly. Thus it will be seen that either the lower or the upper part of the window may be readily blocked off and to any desired extent.

Largest Locomotive in the World.

IN the July issue of THE AMERICAN EXPORTER was printed a picture of the largest passenger locomotive in America. This engine weighed 219,500 pounds. Now a Philadelphia firm has produced a locomotive that weighs 287,340 pounds. It is intended for freight traffic, but the problem of weight has really been what the railroad tracks would sustain. Not long ago it was said to be impossible to run a locomotive that would weigh more than 100 tons, but the one under consideration weighs nearly 150 tons. This new machine is carried on fourteen wheels, and weighs, with its tender and with its tank full of water, 225 tons.

"The power and weight of engines have increased by leaps and bounds," says the *Scientific American*, in describing the new monster of the rails, but the real problem of transportation is not to make locomotives as heavy as possible, but to get the greatest possible strength with the least possible weight. A British scientist says that all our heavy steam locomotives will be on the junk heap in fifty years. It is probable, however, that the junk heap will be doing business with these engines much sooner than our British friend anticipates.

American Electric Cars for Great Britain.—The British Westinghouse Electric and Manufacturing Company, Limited, of which George Westinghouse is president, and in which the Westinghouse Electric and Manufacturing Company of Pittsburg and New York is largely interested, has secured a contract for the equipment of all the cars—about 700—of the Glasgow corporation electric traction system with magnetic brakes. Large contracts have also been taken for similar equipments to be used on the cars of the Leeds and Batley municipal electric lines.

Some New Railway Inventions.—American inventors have recently brought forth some new devices. One enables the motorman of an electric car to move a switch without leaving or stopping his car, another automatically sets the air-brakes on trains and a third provides for seats in ordinary cars that can be converted into beds without any more bother than readjusting the frames much in the same manner as seat-backs are reversed at terminals.

Record Beaten in Loading a Car.—The loading of a thirty-five-ton railroad car with iron ore by steam shovel in the mine in three minutes comes pretty near eliminating the elements of time and manual labor in mining. Dumping ore into a vessel's hold at the rate of sixty tons a minute likewise seems to be about as close as it is possible to get to eliminating waste time. Both these records have been made recently.

Large Contract for American Electric Equipment.—The General Electric interests have secured a contract from the Birmingham Tame and Rea Drainage Board for the complete equipment of the generating station and eight substations and the erection of a transmission line, five miles long, together with the motors and accessories.

Our Woodworking Machinery in Demand.—According to the *British and South African Export Gazette*, there is a brisk demand in South Africa for woodworking machinery, which is being supplied by an American manufacturing concern.

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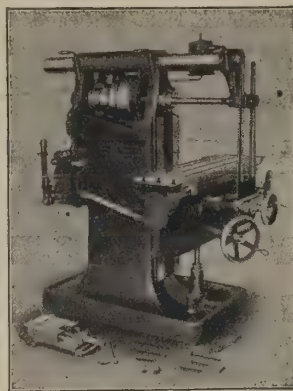
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Gain in Exports of Wire, Wire Nails and Pipe.

WE have not mentioned for several months the growth of the foreign demand for American wire, wire nails and pipe lest it might become monotonous to our readers. The returns for October are of interest, as showing the drift of the trade and its increase in volume. Nearly 11,000 tons of wire, wire nails and pipe were shipped through New York and other Eastern ports during the month by the United States Steel Corporation to various foreign countries. The October exports show an increase of some 65 per cent., when compared with similar shipments made in September.

The largest export shipment of wire went to Australia, 3,276 tons in six lots out of the total consignments of 6,826 tons sent abroad in October having gone to the Antipodes. One lot alone represented 1,528 tons. South America was next on the list, 1,421 tons having been forwarded to that part of the globe. Eight hundred and sixty-seven tons in several lots went to the Argentine Republic. To Brazil was sent 326 tons in six shipments, and 228 tons went to Chili in two lots. Four hundred and sixty-two tons were shipped in five lots to South African ports. To Europe 437 tons were shipped in twenty-one lots, practically all of which went to British ports. Mexico took 112 tons in four lots. Other wire exports in October went to Port Limon, Costa Rica; Shanghai, China, and San Juan, Porto Rico.

The wire nail exports aggregated 2,578 tons, as compared with 1,443 tons for September. The shipments to Great Britain and the Far East were the heaviest. To British ports 728 tons were forwarded in thirty-two lots. To China and Japan 622 tons in four lots were shipped. Three hundred and eighteen tons went to Australia in three shipments. To South Africa was exported 206 tons in seven lots. To Continental Europe 183 tons were sent. South America was a purchaser to the extent of 177 tons. Other shipments went to many places.

The pipe exports aggregated 2,396 tons, as against 1,448 tons for September. Europe was the biggest buyer, 1,662 tons going to that part of the world. To British ports 691 tons were forwarded. One hundred and eight tons went in a single shipment to Australia. Mexico was forwarded 118 tons in one lot. Other pipe exports were made to Chili and South Africa.

Large Export Orders for Iron Manufactures.

ORDERS for material from the four quarters of the globe are being filled in the iron mills and workshops in the lower Monongahela Valley, of which Pittsburg, U. S. A., is the central point, and within a few weeks large consignments of machinery and material will be shipped from that district to the remote corners of the earth. The foreign orders to the mills are coming in rapidly, and at no time for the last two years have they booked as many foreign contracts as during the last month.

The Westinghouse Electric and Manufacturing Company has received most of the orders from foreign countries, and machinery and equipment for power and light plants are being shipped to nearly every country from the East Pittsburg Works. The Westinghouse Machine Company at East Pittsburg and the Westinghouse Airbrake Company of Wilmerding also have a large number of foreign contracts on their books, and several shipments have been made to South Africa, the South American countries and other distant points.

The Edgar Thomson Works of the Carnegie Steel Company will soon begin work on a 5,000-ton order of steel rails for a Korean railroad. They only recently finished several large foreign contracts. The Homestead Steel Works of the same company have nearly a dozen orders on the books for ship plates for boat builders in England, Ireland and Scotland, and a large order for pipe plate for Australia. The Standard Chain Company has just completed an order for merchant chain for Brazil and the Argentine Republic.

The Rankin plant of the American Steel and Wire Company is working on an order of field fencing for South Africa, and bath-tubs are being shipped from the McVeigh & Walker plant, in Braddock, to the Philippines and China.

Nearly every manufacturing plant in Braddock, Homestead and other towns in the Monongahela Valley has foreign orders booked.

Foundry Exhibit at the American World's Fair.

PRESIDENT ENGLER, of the Worcester (U. S. A.) Polytechnic Institute, recently had a conference with a number of leading foundrymen from different parts of the country respecting the building and exhibit which the latter purpose to have at the St. Louis Exposition next year. It is proposed to erect and operate a model foundry, fully equipped with all necessary apparatus and exhibiting in operation all the processes of modern foundry practice. An advisory committee has been appointed to organize the work, and of this committee President Engler is a member. The Worcester Polytechnic Institute has been invited to prepare complete plans for the building, having in mind special reference to ideal conditions as to light, heat, ventilation and sanitation, and to a maximum of economy and efficiency by convenience of arrangement and use of the best modern devices in machinery and methods. Besides furnishing space for all ordinary operations in iron, brass, aluminum, steel and lead, the building is to provide accommodations for a chemical laboratory, an exhibition room, a library and reading room, etc. This foundry exhibit is designed to be primarily educational in its character, and during the entire time while it is in operation in St. Louis it will be under the direction and charge of the Worcester Polytechnic Institute.

Demand for American Farm Tools.

THE *Farm Implement News* sums up the reports of the United States consuls on our agricultural implement trade abroad, summarized in recent issues of THE AMERICAN EXPORTER, as follows: "Generally American consuls report that the use of modern labor-saving farm implements and machines is increasing in all foreign countries where agriculture is of any importance, and the American machinery takes the lead whenever it has been properly introduced and looked after. In countries where little manufacturing is done its introduction is favored and aided by the governments. In countries where the manufacture of implements is carried on to any considerable extent the governments seek to protect their manufacturers by the imposition of duties, more or less heavy, on foreign products, and particularly on the American. Our best trade, however, is with the countries most protected, for the reason that a demand large enough to be worth protection will seek the best machinery and will take it largely, though of foreign make and burdened by high duties. Foreign farm machinery does not come into the United States, whether our duties be high or low, because it is inferior and there is no demand for it here; but our farm machinery is in best demand in the most progressive agricultural countries and gets there over tariff walls made especially high to keep it out, and would get there in much greater quantities if those walls could be lowered or removed by reciprocity agreements."

Our Implement Trade with Africa.

UNDER recent date a London correspondent says: "Although trade in the implement business is dull throughout the United Kingdom, there is every indication that it is brisk in South Africa. The latest advices speak well for the future. The value of the imports of implements into Cape Colony for the first three months of the year, contrasted with the same period of 1902, was £102,000, against £25,000. For the Transvaal (in this case the figures include machinery and metal goods) the value was £1,215,000, against £500,000, while substantial increases are noticeable for the other adjacent colonies. This increase has been in steady progress for months, indicating a healthy return to normal conditions. A keen observer has been over the whole field and he finds that in several branches of the implement and machinery business American makers have made a favorable impression on the native farmers for the excellence of their goods."

The correspondent speaks of the demand for American plows as being greater than for those of British make. He says: "In the Orange River Colony and in the adjacent colonies the United States plows are the most frequently seen, the reason being that they are lighter, just as strong, less complicated and well adapted to the undulating nature of the land. Steam plows, too, have been successfully introduced into the Transvaal."

Gasoline Engines for Marine Uses.

AT the recent convention in New York of the American Society of Naval Architects and Marine Engineers an interesting and timely paper was read on the subject of "Gasoline Engines for Marine Propulsion" by D. H. Cox, formerly a constructor in the navy.

"The development of the automobile having demonstrated the possibilities of explosive gasoline engines for vehicle propulsion, their application to marine work has followed as a matter of course," he said. "While the many troubles and accidents that have been experienced by the majority of automobilists have tended to prejudice the minds of many persons against these engines, this should not really be the case. Rather should it be considered decidedly to the credit of an engine of its type that it has been able to be used with any degree of success for automobile work."

"The heat produced in the cylinders from the high temperatures of the exploded gases can, in the marine motor, be readily drawn off by an unlimited supply of circulating water, while in the automobile the cooling effect of the air must be relied on. The dust and grit, with their disastrous effects upon automobile engines, are not to be contended with. The conditions of use are more severe for the automobile."

Foreigners Now Buying American Steel.

COMMENTING on reports in THE AMERICAN EXPORTER regarding the change in the movement of steel, whereby our importations are declining and our exports are increasing, the *New York Times* says editorially:

"In view of the widespread interest taken in the outlook for the iron and steel industry, the announcement that 100,000 tons of American steel have just been ordered by Welsh tin-plate makers will be read with considerable attention. This is quite the most important development in our steel trade that has come to notice in a long while past."

A New Power Hammer.—A new power hammer has been invented by William R. Jenkins, of Bellefonte, Pa., U. S. A., the object being to provide means whereby the force of the blow or stroke of the hammer can be readily controlled and adjusted to the work in hand, without any change in the speed of the hammer, as is the case with power hammers ordinarily employed. *Modern Machinery* gives an interesting description of the device.

Without doubt, America's most famous Bottled Beer—manufactured from the purest and best materials known to the Brewing Art. Absolutely no beer in the world its equal in merit.



Established in 1836.

Cable Address: "Hoster."
Codes used :
A B C and Western Union.

Copies of Orders to Export Commission Merchants Should Be Mailed to the Company's Home Office, Columbus, Ohio, U. S. A.

MANUFACTURER OF

Special Offer for Export.

Ar. assortment of 39 Instruments for **\$89.40** (£18 13 5) Net.
F. O. B. New York, as follows: All pro

All protected by patents.

					Retail.	Net.						
3	Guitar-Zithers,	No. 0,	27 strings,	3 chords	\$4.00	\$1.10 each	\$3.30	£0	13	9		
3	"	No. 2,	31	"	5.00	1.40	4.20	0	17	6		
3	"	No. 2½,	41	"	6.00	1.90	5.70	1	3	9		
3	"	No. 3½,	51	"	8.00	3.00	9.00	1	17	6		
3	Tremolo Flat Mandolins,	No. 100,	made in bird's-eye maple, mahogany neck, selected spruce top, inlaid marqueterie and rosewood fingerboard		6.00	2.00	6.00	1	5	0		
3	Tremolo Flat Mandolins,	No. 200,	same as above, but all rosewood with ebony fingerboard		7.50	2.40	7.20	1	10	0		
3	Mandolin-Harps,	Style A,	31 strings,	4 chords	6.00	2.50	7.50	1	12	1		
3	"	Style B,	41	"	8.50	3.50	10.50	2	3	9		
3	"	Style F,	51	"	10.00	4.25	12.75	2	13	2		
3	Mandolins,	7 ribs,	maple and birch, cheapest and best made		3.00	1.05	3.15	0	13	1		
3	"	9	rosewood and bird's-eye maple, mahogany neck		4.00	1.85	5.55	1	3	2		
3	"	13	"	red	4.75	2.25	6.75	1	8	2		
3	"	15	"	mahogany neck	5.50	2.60	7.80	1	12			

Total Net Price for 39 Instruments, f. o. b. New York

Approximate weights and measurements of assortment—Net, 112 lbs. (51 kilos); gross, 248 lbs. (113 kilos); cu. feet, 27 ($\frac{3}{4}$ cu. meter).

We will fur

Mandolin Harp.

We will furnish the complete assortment, or any portion of it, at the prices quoted above. Order through any reliable exporter.

ST. PAUL, MINN., U. S. A.

Owners and Manufacturers of

Bohn's Patent Dry Air Syphon System of White Enameled Refrigerators.

The Bohn Dry Air Syphon System insures a low and uniform temperature, ranging from 38 to 48 degrees Fahrenheit. With our Enamel Lining, you need only to wipe the food compartments with a damp cloth to clean perfectly. The only absolutely sanitary refrigerator made.

Adopted and used exclusively by the Pullman Company for all of their Dining and Buffet Cars. Pennsylvania Lines, New York Central, Michigan Southern, Union Pacific, Canadian Pacific and all other railways throughout "the States" and Canada as well as by thousands of homes, hotels and clubs.

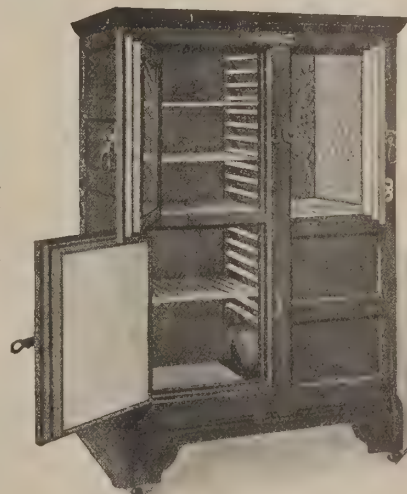
For Foreign Markets Only.

The prices here quoted includes boxing ready for transportation and delivered F. O. B. cars at New York City.

No. 2. Style "A." Panel Door. Price, \$23.00. Outside measurements (inches): Width, 38; depth, 21; height, 44. Weight, boxed, 278 pounds.

NOTE.—Orders received direct, or through export commission houses. When ordering through the latter, to avoid errors, please mail us a duplicate of order.

Our forty-page catalogue, illustrating and describing the various styles of White Enamel Refrigerators made by us, mailed postpaid.



No. 2. Style "A." Panel Door.

No. 3¼. Style "D," Panel Doors.

From Milk to Butter in ONE Minute.
NO CREAM SEPARATOR NECESSARY.

The use of the "One-Minute Churn" assures to private families **fresh, pure and wholesome butter at all seasons of the year**, doing away with tainted and poorly manufactured butter.

EXPORT ONLY.—Upon receipt of **Thirty Dollars (\$30.00)** in U. S. Gold, or its equivalent, we will box, ready for shipment abroad, one of each, seven in all, of our "One-Minute Churns" as follows:

Size A,	Industrial Miniature, capacity	1 quart
Size No. 1	(Special Household Size) "	1 gallon
Size No. 2	" "	3 "
Size No. 3	" "	5 "
Size No. 4	" "	7 "
Size No. 5	" "	9 "
Size No. 6	" "	13 "

NOTE.—Size A is an Industrial Toy for Children.
Orders received direct or through export commission houses.
Specify "One-Minute Churns."

THE ONE-MINUTE CHURN CO.

I. M. MURPHY, President.

No. 9 Old Slip, New York, U. S. A.

The Recognized Type
of MOTOR for **Automobiles**

IS THE

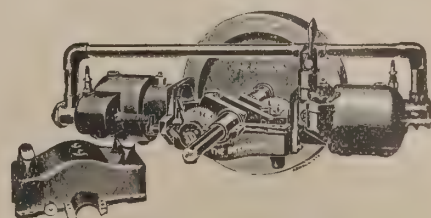
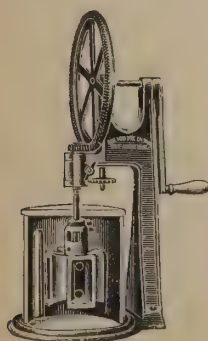
(Non-Vibrating),

With Transmission Gear on Motor Shaft.

From 5 to 30 H. P.

Accepted as "The Standard" throughout the United States and now being adopted in all parts of the civilized world. Our illustrated catalogue and full particulars mailed postpaid. Orders received direct or through export commission houses.

BRENNAN MOTOR CO., Syracuse, N.Y., U.S.A.



Growth of Exports of Boots and Shoes.

LAST month we published United States Government statistics showing the increase in our export trade in boots and shoes. The New York *Times* follows up the subject with some interesting information, including the fact that the gain since 1893 is nearly 1,200 per cent. It says in part: "Exports of American shoes are increasing, but experts who are familiar with conditions of the trade here and abroad say that only a beginning has been made by the domestic manufacturers in getting foreign business, and that fields of untold wealth lie open to those who are energetic and enterprising. It has been computed that the boot and shoe factories in the United States have capacity sufficient to supply, by six months' continuous operation, all the footwear required by the domestic trade in a year. It is argued that if the volume of foreign orders were sufficient to keep the factories running in the seasons of the year when the home trade is dull there would be an enormous gain in wages to employees, who are now idle a large part of each year, and in additional profits to the manufacturer."

George C. Hardin, who has traveled in South America and the West Indies for years selling shoes, said of the increased business:

"In 1892 I was the only American going out to sell shoes to the British West Indies. This year, while I was in the islands, I met seventeen other salesmen from New York and Boston. The people in South America and the islands are about a year behind us here in styles. Salesmen in this country are now taking orders for next fall. After Christmas I will start for the South to get orders for boots and shoes that the factories will make next year. By that time the domestic orders are in and the trade knows what styles will be popular. There is a decided advantage for the manufacturer in the way the South American trade follows the domestic development. There is not much demand in the West Indies for new styles. I carry now about half of the same samples I took with me the first time I went there. One of the best-selling shoes in South America is the Brut Tamer. The Creoles gave this name to the shoe, and certain manufacturers who add an 'e' to the Brut are in error. This shoe is sold at 85 cents in America, \$1.20 at wholesale in the Southern countries and about \$1.44 retail. There is also an increasing demand for the finer American shoes."

Das Handels Museum, an Austrian trade paper, says on the subject:

"Attempts are now being made to form a trust of the German leather manufacturers. As a preliminary step a central office will be located in Berlin and the members of the trust will be assessed about 75 cents per employee for its maintenance. Statistics show that German exports of shoes have fallen off, and that imports of American shoes are rapidly increasing. Americans are opening stores in all the German cities."

\$100,000,000 for American Canals.

IT looks as if the waterways of the United States, natural and artificial, are about to obtain the position in the public mind that the commerce of the country justifies. Last month the State of New York voted \$100,000,000 to deepen and widen the Erie Canal by an overwhelming majority, and work on the canal will soon begin. That the action of the recent New Orleans waterway convention will have a far-reaching influence favorable to the improvement of the Mississippi and Ohio rivers, together with the latter's important tributaries, there can be no doubt. The convention was composed of strong men, influential in the various sections they represented, many of them men of national fame. Therefore, when a body of such men, representative in every sense, makes a demand upon Congress to improve the nation's two great inland waterways, the Ohio and the Mississippi systems, the demand must receive consideration. The convention was one of the largest, dignified and conservative ever held in the Mississippi Valley. The joining of the Ohio improvements to those of the Mississippi was the most important result of the convention. In its unimproved condition the Ohio is the greatest freight-producing inland system in the world. When it is improved from Pittsburg to Cairo, it will carry to New Orleans and from thence to the markets of the world a tonnage surprising in its magnitude. The result will be that the Gulf of Mexico will become a great harbor of the United States and New Orleans one of the greatest export cities in the country. The general effect of all the improvements planned will be advantageous not only to domestic trade, but to our foreign commerce as well.

Foreign Shoemakers Come to America.

THE growth of the shoe manufacturing industry in America has kept pace with the development of the country to an extent that has brought about an influx of foreign workmen. The city of Lynn, in the State of Massachusetts, is one of the centers of the industry, and a correspondent in that city has the following interesting comments to make on the situation: "The rapid increase in the demand for help in the shoe factories of Lynn has brought to the city a cosmopolitan population very marked in its distinct elements. Some years ago the influx began with the coming of the French-Canadians, who came by progressive stages through the mill towns of the States of Maine and New Hampshire to the cities of Lowell and Lawrence and gradually overflowed into Lynn. To-day there is a French population of over 1,000, and they constitute a very respectable part of the people, having a church and parochial school and several fraternal societies.

"Later have come the Armenians, Greeks and Italians, until now there are hundreds of the dark-skinned natives of southern Europe busily employed in the best shoe factories. Many of these foreigners come direct to Lynn from the vessel which brought them to this country. They are taken in hand by friends who have preceded them, and given instruction in the easier parts of shoemaking, proving to be apt pupils and are very soon able to take a place and earn their own way. They live cheaply and save their money, being little inclined to go about the barrooms. They rapidly improve in their workmanship until they are advanced to the best work, and now some of the finest shoes are turned out by Armenian and Italian workmen. It is noticeable that they are eager to acquire the English language and the evening schools are attended by a large number. Many of them have sent for their women-folks, and hundreds of happy homes have been the result."

Technical Education Benefits Export Trade.

THE great influence of technical education in developing industries, increasing export trade and augmenting a country's wealth is shown by a report which the British Consul at Stuttgart lately sent in to his Government concerning the technical high schools of Germany. There are nine such created and conducted by the Government; two more are now being established. Besides these state institutions many others under private management, but subject to governmental supervision, exist in Germany, which turn out able engineers and scientifically educated craftsmen. The British Consul points out that Germany, in consequence of its thorough and widespread system of technical education, has surpassed within the last fifty years all other nations, and now holds first place in chemical manufacture. He estimates the value of the chemical products annually made in Germany at 1,000,000,000 marks, or \$238,000,000. A very large part of these (especially dyes made of coal tar) are exported to the chief manufacturing nations—the United States, England, Belgium, France, etc., as also to China, Japan, India, etc. There is scarcely a country in the world which does not use German chemicals of some sort. The transformation of Germany from a poor agricultural country to one of the first and richest manufacturing and exporting nations is, to a considerable extent, due to German superior technical training. Some of the German chemical works have branch establishments in foreign countries. The German capital invested in these earns big profits and adds to the national wealth of the country.—*Modern Machinery*.

Wonders of the American State of Oregon.

PROBABLY no country in the world is so rich in natural resources as ours that is at the same time so sparsely settled. The diversity of agricultural possibilities is continually being shown by successful experiments, and the richness of the river valleys beggars description. The Pacific Northwest is preeminently the wonderland of production on the continent. William Macleod Raine, in *Pearson's Magazine*, tells how a farmer in the Hood River country raised on four acres 800 bushels of potatoes, that nearly all ran from three to eight pounds apiece. There was not in the lot one that weighed less than a pound. Squashes weighing as much as a large man, pumpkins tipping the scale at the hundred weight, watermelons larger than the Southern pickaninnies, whose eyes would bulge at seeing them; turnips larger than one's head, pears and apples with a circumference of half a yard, are to be seen at the annual fairs of Salem and The Dalles. The biggest apples, the biggest pears and the biggest cherries at the Chicago Exposition were from Oregon, and the charge cannot be made against them that what they gain in size they lose in flavor. The Pomological Society, which is the highest authority on fruits in the country, awarded to the State of Oregon the Wilder Medal for the horticultural exhibit at the Pan-American Exposition. The "Web-foot State" stands first in the production of hops, raising about one-third of the country's total production. So far as is known, there is no spot on earth, with the exception of eastern Oregon and Washington, and the adjoining valleys of Idaho, where three or four crops of wheat may be harvested from one sowing. Yet since the first settlement of the country these "volunteer" crops have been reaped. A second crop from a single seeding is officially reported to have yielded thirty bushels to the acre.

Deodorizing Petroleum Products.—The increasing use in America and other countries of the naphtha engine, whether in motor vehicles, in launches, or elsewhere, makes the question of the deodorization of petroleum products a serious one. M. Charles Henry has indicated a method of deodorization which is very practical, being both rapid and cheap. To 220 pounds of petroleum he adds 44 pounds of water, $3\frac{1}{2}$ pounds of massicot, or lead oxid and 20 pounds of caustic potash. The whole is shaken for about an hour and then decanted. The oil thus treated will be absolutely inodorous.

If Coal Is Costly, Then Burn Mud.—Several American inventors have been trying to find substitutes for coal. Edward Atkinson, of Boston, has invented a method of making mud bricks, which, he says, are equal to Irish peat. Professor Norton, of Harvard, recently tested these mud bricks and found that they gave out a clear, strong flame and two-thirds as much heat as the same weight in coal. Dr. R. J. Schrimper, of St. Paul, has invented a brick that is made out of soft coal refuse. It is said to cost less and to give out 50 per cent. more heat than soft coal.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."



GUARANTEE WASHER.

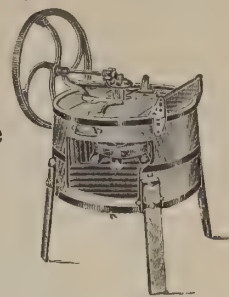
THE **Guarantee**

FOUR-STROKE ROTARY

Washing Machine

Just placed upon the foreign and home markets, combines the **Latest Improvements in High-Speed, Ball-Bearing Washing Machines** and will accomplish all that is claimed for or required of any washing machine, and more.

NOT A SPECULATION BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.



GUARANTEE WASHER.

FOR TWENTY DOLLARS

in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines.** (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds. Order **FOUR NOW.** Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States.
NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.

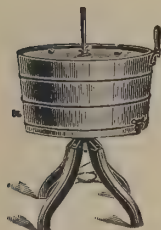
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TYPEWRITER**

RIBBONS & CARBONS

We manufacture the largest variety of Carbon Papers and Ribbons made by any one concern. 100 varieties to choose from in Typewriter, Pen, Pencil, Stylus and Railroad Carbons. Write for catalogue and export prices. Orders received through any New York exporting house at export rates.

INDELIBLE MFG. CO., INC., ROCHESTER, N. Y., U. S. A.



"1900" Washer

**"1900"
Ball-Bearing
Washing
Machines.**



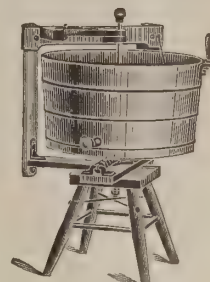
"Domestic" Washer.

**"1900"
Ball-Bearing
Washing
Machines.**



"Home" Washer.

**"1900"
Ball-Bearing
Washing
Machines.**



"1900 Junior" Washer.

A REMARKABLE RECORD!!!

Commencing in the year 1900 to manufacture the "1900" Washing Machine, we at that time "turned out" an average of **Five Washers per day.** During the month of August, 1903, we manufactured and sold **OVER FOUR HUNDRED Washers per day.**

A REMARKABLE RECORD!!!

REWARD OF MERIT!!!

REWARD OF MERIT!!!

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-one years' practical experience in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment,** but by the adoption of our **agitator** tosses and tumbles the garment through a **whirlpool of water,** thus forcing the water through the **finest or coarsest fabrics,** causing the clothes to become **ABSOLUTELY CLEAN,** without boiling or scrubbing, without wear or tear, and without the use of chemicals.

SPECIAL OFFER FOR FOREIGN MARKETS ONLY:

\$22.75

Upon receipt of **Twenty-two Dollars and Seventy-five Cents** in U. S. gold, or its equivalent, we will box, ready for steamer, and deliver F. O. B. cars at New York City, **One of Each (Four in All), "1900," "1900 Junior," "Domestic" and "Home" "1900" BALL-BEARING WASHING MACHINES.** Weight of the four machines, boxed 300 pounds.

To facilitate our increasing export trade we desire to communicate with one responsible business house in each trade center of the world.

Tens of thousands of the "1900" Washing Machines have been sold in the United States, as well as in all parts of the world. Many of our agents at home are making over \$200 per month. Live men in your vicinity can do as well.

Orders received direct or through export houses; when ordering through the latter, to avoid errors, please mail us duplicate of order. Our Illustrated Catalogue mailed postpaid.

The "1900" WASHER COMPANY
BINGHAMTON · NEW YORK · U.S.A.

Big Apple Shipments to Foreign Markets.

THE shipment of American apples to European markets this season has been greater than ever before, having passed the 1,000,000-barrel mark October 17th, a record never before equaled at such an early date. Last year, which was one of the best ever known previously in apple exports, the million mark was passed on November 8th, three weeks later.

The farmers find it exceedingly difficult, not only to get their apples in before the heavy frosts, but also to secure barrels in which to pack their product for the foreign market. According to the testimony of one person, who has been visiting in the State of Maine, some of the apple-growers were obliged to send ten and fifteen miles for barrels, and then carry back one manufactured of wood almost in its green state, correspondingly heavy.

Freak apples are found quite frequently. The other day a Miss Lena Sinclair, of Hallowell, took to a newspaper office a large apple, the upper half of which was a rich russet color and the lower half a deep red. It looked as if two apples of different varieties had been halved and the upper half of one joined to the lower half of another.

The New York Times gives the following additional information: "American apple exports this season are almost 2,000,000 barrels, the largest quantity ever known, and there seems to be no cessation in the demand. Short crops in England and all over Europe are responsible for the unusual demand. Exporters say that nothing in their advices indicates any reduction in demand, and they are arranging to handle quite as many apples in the next few weeks as they have during the past month. During the week closed November 21st enormous quantities went across. According to statistics compiled by W. M. French, one of the largest apple exporters in the world, the figures were: From New York, 60,945 barrels; Boston, 67,077 barrels; Montreal, 73,092 barrels; Portland, Me., 10,483 barrels, and Halifax, N. S., 19,500 barrels. Of this quantity Liverpool took 113,332 barrels; London, 46,443 barrels; Glasgow, 28,109 barrels; Hamburg, 20,862 barrels; Hull, 5,326 barrels; Paris, 653 barrels; Antwerp, 1,161 barrels; Bremen, 316 barrels; Copenhagen, 250 barrels; Bristol, 6,877 barrels, and Manchester, 7,768 barrels, a total of 231,097 barrels, the largest week's business in the history of the export trade."

American Fruit Sent to the Far East.

IN our issue of last June we gave some account of an extremely interesting experiment made in the matter of shipping American fruit across the Pacific Ocean to the Far East. We understand that the experiment was successful, and a correspondent at Santa Clara, in the State of California, sends us the following regarding a similar experiment:

"The possibility of shipping fresh fruit to the Philippine's and Asiatic ports from the United States has been demonstrated by a successful shipment sent by S. W. Charles, of Palo Alto, from the packing house of A. Block, of Santa Clara. The shipment was made on the transport Sherman in cold storage, and the fruit was five weeks in transit. The fruit selected was from a lot being prepared for the London markets and included one box of white Astrakhan apples, one box of plums and one box of Bartlett pears. Mr. Charles wrote to his relative, Allan E. Peck, assistant surgeon at Manila, notifying him of the shipment and asking him to send full particulars of the condition of the fruit on arrival. A reply has been received, indicating that the fruit arrived in almost perfect condition. The apples were sound.

"They took the army officers off their feet," remarks the correspondent, "and my quarters were besieged until they were gone. The apples we get are small and inferior in quality, coming from Australia with the large meat shipments from there. However, they sell at 10 to 25 cents each."

"The plums also were in perfect order. Of the pears four or five were a little past the point of ripeness. The rest were excellent and without a flaw. Refrigeration was not perfect, as the fruit was with the stores for the transport service mess. The frequent withdrawal of supplies for use on board the ship caused a loss in refrigeration. With complete refrigeration fresh fruit can be, no doubt, successfully marketed in the Philippines."

War Gave Bicycles a Boom in Africa.

ONE of the changes brought about by the war in South Africa has been the increased use of bicycles. A correspondent writes as follows on the subject: "A few years ago the horse was employed, without exception, by Boer and Briton alike for riding purposes. A serviceable horse was an absolute necessity, and men of means had several. The pride of a Boer in those days was a horse. It almost came before his 'vrow.' Most of his time was passed in the saddle riding to the nearest town, often several miles distant, and visiting neighboring farmers on business and pleasure bent. Much the same necessity existed in those days for the Britisher to keep some horses. Mining ventures were often far from towns, and stores, which were principally run by Europeans, were away from settlements. Now the bicycle has to a large extent taken the place of the horse.

"It would hardly be believed what primitive sandy roads it is made to travel over. Often it can be seen bumping over the veldt itself, or gliding along some narrow Kafir footpath. There are several Boer families living around me belonging to the poorer class of farmers. The men all, without exception, use the bicycle in place of the horse. When questioned on this they

state that the bicycle is cheaper, quicker and more to be depended on. Horse sickness, one of the curses of the Transvaal, every season carried off their horses until they were completely crippled by this annual drain on their purses. One of these Boers told me he had had his machine for seven years, riding it to town daily, and, with the exception of new tires, it had not cost him a penny since the first outlay. If I look along the valley at sunrise or sunset I can pick out a string of little figures perched on their machines riding to their work in Pretoria and returning home. It is five miles to town from here, and it takes them but twenty minutes, notwithstanding the heavy sand in some parts. On a horse it would take double this time, and then you would have to feed and stable it. These Boers soon become expert and fearless riders, and equal their splendid horsemanship; though, dressed in their rough suits, they do not present a very natty appearance.

"But if one wants to realize the universal use of the bicycle one must go to Pretoria or other towns. On the 'stoeps' of the private house at meal hours there are always three or four machines standing against the rails. Outside the eating houses dozens can be counted, and in the yards of the Government building stacks of them are piled, belonging to the clerks at work within. The streets are full of them, many of the riders being ladies and school children, and not a few Kafirs. Of these latter some are mounted on their masters' machines, while others have their own. In fact, all and every class has a bicycle, not only in the towns, but to a great extent throughout the country. A man who is not a cyclist is so rare that you might ask a hundred if they rode and not come across a non-rider. One has only to take a stroll around Pretoria and count the cycle shops and agencies to gather a good idea of the extent of the demand. Many of the best English makers are represented, and, of course, American machines are stocked. A useful bicycle can be purchased nowadays for about £12, and a first-rate wheel, with all the latest improvements, from £16 to £30. Still, when all is said, it is strange that the bicycle should not have ousted the saddle-horse."

Wonderful Woods of the Philippines.

AMERICA'S new possessions in the Far East are constantly showing the wisdom of the acquisition of the archipelago. The value of the woods in the Philippine Islands to many branches of industry is very great, for they possess qualities unknown to our own. A correspondent of the *Modern Machinist* says that one of them is an exceedingly fine-grained, tough wood, very useful for tool handles, while another seems to be a cross between wood and iron, for it is very heavy and resistant, so much so that the natives use it for spear-heads. It can be readily worked by tools and has a metallic ring. In some cases it is wrought to shape by emery wheels. Another species is a close-grained, tough wood, which seems to be a dyewood, for when immersed it stains the water bright yellow for a long distance around it. This wood is also quite heavy and takes a fine finish. American lumbermen call it "yellow jack." Still another wood is called "belang" by the natives, and white wood by American lumbermen, but is quite different from our own wood of that name. It can only be worked by very sharp tools, but has a veined surface when finished, and is capable of taking a high polish. The business of preparing these woods for American markets is going forward with despatch and it is said to be very profitable.

Effects of American Manufacturing Skill.

COMMENTING upon the foreign trade of the United States, the New York World says editorially: "A decrease in the importation of luxuries is noted. Is not the cause to be found in a national development of skill in craftsmanship which is putting us ahead of Europe in the production of such articles? It is certain that American-made jewelry has attained a perfection of form and finish which renders it superior to the foreign product. Of two articles of jewelry made along similar lines the American not only in many cases appears more artistic, but it now possesses an intrinsic value which makes it the better purchase. Not only is it manufactured on a closer margin of profit, but in its retail price no trans-Atlantic freight is reckoned or broker's charges. In glassware, silverware, cutlery, clothes, shoes, we excel. In multifarious lines of manufacture America can truthfully utter the bird-o'-freedom boast that she beats creation. And this, notwithstanding, that there are peasant women on the plains of Asia who can weave a more beautiful rug than any carpet-maker the world over can manufacture. It is the survival of an individual trade such as this in full flower which keeps the conquest of machinery from being complete."

Pneumatic Oil Can.—An American inventor has designed an oil can which does not have to be lifted when a lamp is to be filled. It has a pneumatic pump located on the top of the can and connected by a tube to an air-tight compartment below, which is formed by inserting a partition in the can near the bottom. Surrounding the tube, where it passes through the partition, is a valve, through which the oil can flow into the lower compartment. As soon as the rubber bulb is compressed to force air into the lower compartment the pressure closes this valve and drives the oil upward through the pipe leading from this compartment to the exterior of the can. There are no vents to open to permit the inflow of air to replace the oil removed, and no valves to be opened or closed. All that is necessary to do is to place the lamp to be filled beneath the outlet and give a few compressions on the rubber bulb.

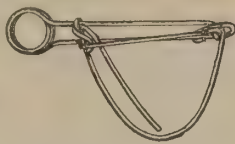
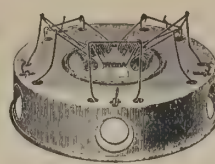
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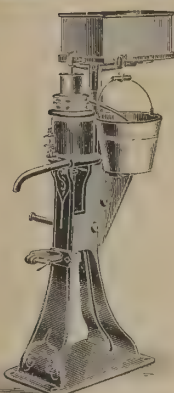
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**Figure "A 4,"**
Watrous Aquameter
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Watrous Combination Hot and Cold Water Fixture.

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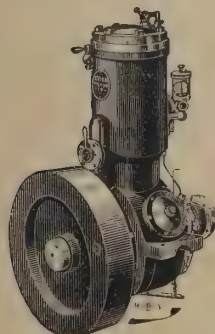
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Freer Trade with Canada.

IF the recent Alaska boundary decision did nothing else, it gave the Dominion of Canada an extremely good advertisement, as we sometimes say in America. The resentment shown by many people in the Dominion called attention to the country and aroused interest in it not only in the United States, but in the dependencies of Great Britain elsewhere in the world. Canada has been very quiet for years, and in our British exchanges we have read column after column about South Africa, Australia and India, where Canada, if mentioned at all, was dismissed with a brief paragraph. Canada seemed to have been almost forgotten except by the export merchants of the United States who do business with her traders. The newspapers in the United States also have awakened to the importance of our neighbor on the north and we feel safe in asserting that Canada's defeat in the Alaskan controversy was the best thing that ever happened to the country. A writer in *Collier's Weekly* contributes the following information about the trade relations between Canada and the United States, which is at variance with popular belief in some respects, but which we are assured by the editor of the paper is founded on careful investigation:

"Canada is not only our third best customer, but, in proportion to population, our very best. In the fiscal year ending June 30th Canada bought from this country merchandise to the value of \$126,000,000. That makes an average of more than \$25 for every man, woman and child in British North America. In the same period the purchases of the United Kingdom, our largest customer, amounted to only about \$12.50 per capita. This was despite Canadian preference of 33 1/3 per cent. to British imports, and despite tariff obstacles which kept Canada's sales to the United States down to about one-third of the value of goods bought from us.

"There is a growing sentiment along our northern border that this Canadian market is worth more consideration from American lawmakers. It is argued that a good customer should be treated with conciliation and friendliness, not in a spirit of contempt or of hostility. That is the rule in private business. Why should it not be in national business? ask the merchants and manufacturers of the National Reciprocity League, whose membership extends from Maine to St. Paul. In 1898, when the Joint High Commission of British-Canadian and American representatives met at Montreal, the first question on its list was trade reciprocity, while the obstacle which prevented an agreement was the Alaska boundary, now settled.

"Our tariff against Canada is illogical in many ways. Canada is now a great wheat-producing country. Following the natural course of trade, Canadian wheat should come to the American mills at Minneapolis and other cities to be ground. It is turned back by a tariff of 25 cents a bushel. The duty does not affect the price of American wheat. That is fixed in Liverpool. Canadian lumber comes in under a high duty, which raises the price to American home builders. On the other hand, American manufacturers are being forced to build branch plants in Canada because of the tariff barriers.

"New England already has the benefit of free coal from Canada, although the law removing the duty is only temporary. But what reciprocity especially means for New England is a greatly enlarged market, close at hand, for her immense manufactures of boots and shoes, cotton and woolen goods and other products of her ever-busy factories."

Nearly \$200,000,000 for the Panama Canal.

NOW that the completion of the Panama Canal is certain to be a matter of immediate progress—there was never any doubt about its ultimate construction since the United States Congress took action insuring the consummation of the plans of its originator—it is interesting to note what it will cost the United States to give this important waterway to international commerce. It is estimated that it will cost the American Government \$184,233,358 to acquire and complete the canal, besides the amount to be paid to the government in control of the isthmus for the concession. Already there has been an immense amount of money and energy expended on the canal. It is safe to say that a sum more than sufficient to dig a waterway from ocean to ocean at sea level has been collected from investors at different times in its history.

When De Lesseps organized the first company in 1880 for the construction of the canal, it started work with a paid up capital of \$60,000,000. For eight years the company toiled, employing at times as many as 15,000 men. Then came a necessity for changing the plans and the company failed, after having collected in round figures from the sale of stock and bonds \$260,000,000. Of this it was shown that the expenditures actually made on the isthmus amounted to \$156,400,000, and that the cost of excavation and embankment proper was \$88,600,000. The ultimate cost was then estimated as \$174,600,000. For several years an effort was made to capitalize a new company to complete the work, and at last, in 1894, the present Panama Canal Company was organized, with a paid up capital of \$13,000,000. Since that time work has advanced at the rate of about 1,000,000 cubic yards of excavation each year.

The total amount of excavation up to the present time has been about 81,000,000 cubic yards. Unfortunately, only about 40,000,000 cubic yards of this is available for the waterway proposed in 1899-1900 by the Canal Commission, of which Rear-Admiral Walker, U. S. N., was president. The Walker Commission's recommendations included this available excavation in the \$40,000,000 to be paid the canal company for its work, maps, records,

drawings and the property of the Panama Railroad Company. The commission estimated that the total amount of excavation which would be required for the canal to be built from its plans, exclusive of that for the Bohio dam and the Giganti spillway, would be 94,863,703 cubic yards. The work remaining to be done, therefore, represents the difference between the amount of available excavation which it will acquire by purchasing from the Panama Canal Company, or nearly three-fifths of the entire work. It is estimated that the cost of the work will be \$144,233,358, in addition to the sum to be paid to the present owner of the property. By the time it is completed more than \$450,000,000 will have been obtained in one way or another for use in building the canal, while nearly \$312,000,000 will have actually been spent in connection with its construction and administration.

It was the intention of the Panama Canal Company to make the canal 29.5 feet deep. The increased dimensions of steamers now being built has made it necessary to plan for a much deeper canal, and the Walker Commission's plans are for a waterway 36 feet deep.

American Rice Association Asks for Reciprocity.

AMERICA'S foreign rice trade is constantly increasing and the merchants engaged in it are determined to use every effort to gather further gains.

The Rice Association of America, in session last month, adopted resolutions declaring in favor of the Cuban reciprocity treaty and asking the United States Congress, in all reciprocity treaties with Cuba and Central and South American countries, to provide that rice be admitted to these countries. It had been decided originally to send a delegation to Washington to lay this matter before Congress, but the Rice Association decided that this was unnecessary, and that the submission of the resolutions to the Ways and Means Committee would be sufficient. The resolutions call attention to the fact that in eight years the rice crop of this country has increased fivefold, and say further:

"The production of rice in the United States now equals the consumption and gives employment and support to more than 1,000,000 people. The growth of the industry in the future must depend largely upon our ability to secure outside markets. Porto Rico has been of great advantage to us, purchasing annually from us large quantities of low-grade rices. The Hawaiian Islands have been regular purchasers. In Cuba there is, prospectively, an annual market for about 100,000,000 pounds."

Possibilities of the Trade in Diamonds.

NOW that the English papers are prophesying a return to the early Victorian styles of dress we may expect even a larger demand for diamonds for watch-guards and buckles and other paraphernalia of the dandy. At present more than 90 per cent. of the world's output of diamonds is controlled by the De Beers Company, of South Africa. Says the *New York Sun*:

"How much longer the Kimberley properties will continue to yield is not known. A suspicion is abroad that they have seen their best days. If this be the fact, a question arises regarding the source of future supply. The new Premier mine, near Pretoria, continues to present highly encouraging reports. A stone of 280 carats weight is a recent announcement. So long as people continue to pick up specimen stones, as they do, in different parts of South Africa, there remains the possibility that some part of that area will succeed the present workings as the future reservoir for the gem market. But it is not yet reported that the De Beers stockholders are losing any sleep because of any anxiety about the Kimberley mines. Yet if the American people grow ever more and more hungry for the white sparklers it will become an economic necessity for somebody to locate new and liberally yielding diggings. The expenditure of \$30,000,000 a year buys a heap of diamonds."

The Age of Industrial Wars.

IN the industrial battle fought between nations the most important weapon is an intelligent man technically educated. This has been acknowledged in Germany for twenty years, in the United States for fifteen years, and it is now being acknowledged in England. I think that this is true. Any nation that can put on the market a product cheaper than any other nation will sooner or later have the monopoly of the sale of that product. In national politics, tariffs and subsidies may, for a time, give a temporary advantage to one nation or the other, but in the long run it is a question of cheap production. The cost of production depends on two things—the availability of raw materials and the brains of the people who develop that material into finished products.—*The Engineering Magazine*.

War a Bad Game.—The *Shoe and Leather Gazette*, after quoting the gains in our export trade already printed in THE AMERICAN EXPORTER, makes the following comment: "It is quite evident that of all possible wars in which we could engage, a war with England or Germany would bring the most of 'hell' to the people on both sides. Nations so mutually interdependent cannot afford to quarrel. It has been said that 'War's a game which, were their subjects wise, kings would not play at.' It is safe to say that there is sufficient wisdom among the 'subjects' in all three countries to restrain the rulers, especially since the 'subjects' do most of the ruling—for both England and Germany are in reality republics, in most important essentials."



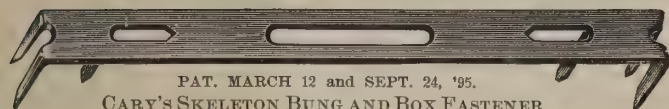
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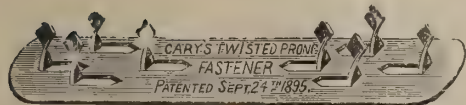
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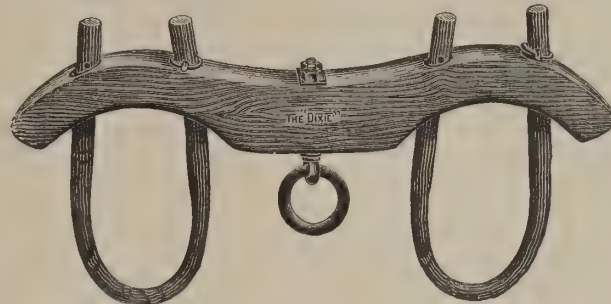
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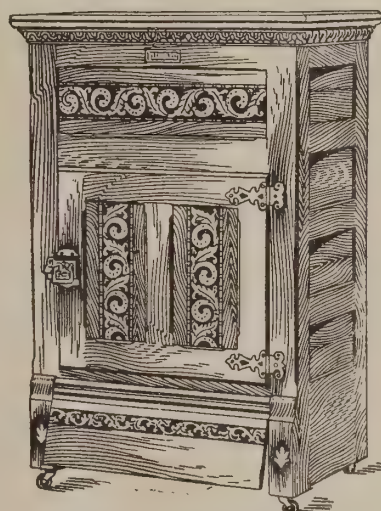


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Curiosities of Ocean Marconigrams.

COMMENTING on the failure of Marconi to receive messages through the air from Cape Breton and Poldhu station, Cornwall, on his late trip on the *Lucania* from New York, a wireless operator aboard one of the English steamers recently told an interesting story of the circumstances which led up to the attempt by the wizard to catch messages from those long distances.

"Last summer," said he, "the Minneapolis, of the Atlantic Transport Line, was on her way from New York for London and the operator was attending to business. His instruments began to get agitated and the young man became all attention. It was a service message from the captain of the Cunarder *Carpathia* to the captain of the *Etruria*, and was easily intercepted.

"The operator figured out, as soon as he could get the data, the positions of the *Carpathia* and *Etruria*, and was dumfounded to learn that both Cunarders were on the other side of the ocean at the time he had caught the signals, or 2,000 miles away from the Minneapolis.

"Nobody would believe at first that signals had been read that far, and when it was told to Mr. Marconi his words were: 'That's all d—— nonsense.' He was later convinced that the young man was right and decided to conduct experiments in long-distance receiving for himself."

The Marconi sharp was asked why it was that the *Campania* and the *Lucania* were so much more successful in sending and receiving than the other steamers. Replied he: "The North German Lloyd Line steamers are successful also. I believe that a good deal depends upon the operator. All the Cunarders have first-class operators—men who are not afraid of working overtime and who are always enthusiastic over their profession. Orders are that the instruments shall always be open so as to catch messages from ships in distress if they should need help, but some men consider it an imposition if they are required to stick to their instruments during the entire voyage."

"What is the volume of business now transacted on each trip?" was asked.

"The Cunarders average \$300 in Marconigrams for every trip," was the answer. "The salary of an operator is \$30 for a trip, which leaves, outside of the fee to the Marconi Company, a handsome profit for the ship.

"The first trip of the Kaiser Wilhelm II with the Marconi apparatus returned \$480, which left a profit of about \$400 for the ship. If a steamer can do no more than \$150 or \$200 in wireless telegrams it hardly pays."

"What is the average distance at which messages are transmitted?"

"Under the most favorable circumstances 240 miles is the longest distance between vessels at sea, but the average between the Cunarders is from 130 to 150 miles."

"Why is it that the Marconi Company has not been able to sell its system to the United States Navy?"

"Because the United States Government wants to buy instruments right out, and not simply the use of them. I think myself the Marconi people are making a mistake in not selling their instruments, but they prefer, like the telephone companies, to rent their instruments for five years, after which term they become the property of the user, but they are also worn out at the end of five years, so that it is necessary for the lessee to hire another set."

Great Growth of Steam Yacht Fleets.

SOME of the most interesting and instructive papers ever read before the American Society of Naval Architects and Marine Engineers were the feature of the eleventh general meeting of the society, which was held last month in New York City. One of the papers which aroused discussion was that of Clinton H. Crane, an associate member, on "The Design of Modern Steam Yachts."

"Few realize the great growth in our steam yacht fleet in the last decade," he said. "In the spring of this year the yacht register shows 433 steam yachts of American ownership, with a total gross tonnage of 58,669.23. Of these 253, with a gross tonnage of 28,306.35, have been built since 1890, and 33, with a gross tonnage of 13,765.12, are of English design and build. One hundred and eight of these vessels, gross tonnage 47,277, are more than 120 feet water-line length.

"It is not possible to overstate the boon to our steam yachting of the coming of the first English steam yachts. Before their advent, with hardly an exception, our fleet was composed of low-sided, herring-gutted boats, with good speed, as a rule, but suited only for sound and river use and an occasional dash around the cape after careful waiting for good weather.

"The English boats have, with few exceptions, been little ships, capable of keeping the sea in all weathers; slower in calm weather than our boats, but capable of maintaining their speed in seas that would drive our designs to harbor. The English yacht showed us what could be done in sea-going qualities and comfort, but the American owner was not satisfied with her speed, nor with such minor details as ventilation and plumbing. He did, however, wish to retain her sea-going qualities and the style of her appearance outside and on deck, and he has set us the problem of retaining these desirable features.

"The American yacht has made its gain in speed in three ways—finer lines, lighter machinery, which includes the use of water-tube boilers, and in many cases lighter scantling and equipment. The fast yacht, like the fast warship, is rarely called on to show her maximum speed. Therefore, in spite of the increase of boiler pressure, due to the water-tube boilers, it has not seemed

wise to increase the cylinder ratio. The fact that most of our yachts are coming and going frequently through the East River has placed a limit to desirable size. A boat of 225 feet water-line is unhandy in the swift tide running through Hell Gate."

Wireless Telephones on American Battleships.

NOTWITHSTANDING the secrecy that has attended the matter, the news that experiments in wireless telegraphy between battleships would be begun at the New York Navy Yard was confirmed last week. A. Frederick Collins, formerly of Philadelphia, recently obtained permission from the Navy Department to install his experimental apparatus on the battleships *Kearsarge* and *Alabama*. These two vessels are now moored about 150 yards apart at the navy yard, and Mr. Collins has erected telephone booths on each ship.

Mr. Collins says he has already had considerable success while working his wireless telephone system over a distance of two miles, and he is hopeful of the outcome of his experiments on the battleships. If the apparatus yield satisfactory results it will be installed on all the vessels of the squadron that is about to go to the West Indies for the winter maneuvers.

Mr. Collins is working under the supervision of Lieutenant Hudgins, of the battleship *Kearsarge*, one of the Navy Department experts in wireless telegraphy. Wireless telegraphy has been the subject of several experiments in the Navy Department, and several vessels are equipped with the apparatus, but wireless telephony has not been tried in any navy in the world.

About a year ago Mr. Collins, with a very crude experimental apparatus, tried to see how a wireless telephone system would work on a ferryboat traversing the North River, New York, as reported in *THE AMERICAN EXPORTER* at the time. Since then, he says, he has so far perfected his apparatus that he has heard distinctly a message over a distance of two miles.

In Boston harbor a system of wireless telephony invented by the late Prof. Elisha Gray has been used for some time by vessels of the Boston Fruit Company to locate the fog bells in the harbor in bad weather, particularly at night, when landmarks were invisible, but no attempt has been made to communicate between vessels by use of wireless apparatus.

New Device to Mark Hidden Wrecks at Sea.

IT is entirely probable that for every dollar of treasure which has been hidden or lost there has been expended another dollar in searching for it, many of the searches proving unsuccessful and being simply money thrown away, but still the hunt goes on. This is especially true of wrecked vessels, which were known or supposed to contain treasure, the owners themselves often sending out ships to search for the wreck, in the hope of being able to recover money and freight. If every ship setting out from port were equipped with the apparatus invented by Ruji Sato, of San Francisco, U. S. A., it would be easier to locate it, should it chance to suffer shipwreck and sink to the bottom of the ocean. This indicating apparatus consists of a large buoy, with a reel mounted underneath which contains a quantity of heavy cord, sufficient to reach from the surface to the bottom of the ocean. One end of this cord is made fast to the safe or some other permanent part of the vessel and the other is secured to the buoy, the latter being placed on the upper deck, where it can by no possibility sink with the ship should the latter chance to go down. In the case of an accident the buoy stays on the surface, but is attached to the ship by the line, thus locating the wreck. In addition to the flags to serve as signals, there should be an indicator of some sort on the buoy to give the name of the vessel.

New Russian Steamship Line to America.—The opening of the new Russian steamship line to America was fixed for November 28th. Cargo had been booked from South Russian ports, and a satisfactory complement of emigrants has been secured at Naples. The service is being inaugurated by volunteer fleet vessels. This is the first long-distance Russian steamship line, except that between Russian ports and the Far East. At the time this issue of *THE AMERICAN EXPORTER* goes to press we are without further information concerning what promises to be an important commercial link between Russia and the United States.

Big Cargo for Argentina.—What was probably the largest cargo of merchandise ever sent from the United States to the Argentine Republic was shipped from New York recently in the steamer *Hypatia*, bound to Montevideo. The vessel carried 11,395 cubic tons of cargo, consisting of harvesting machinery, hardware, railway materials, oils, dry goods and sundries. Exports from this country to the Argentine Republic have been extremely heavy recently. This is said to be due to the reports from Argentina that the crops there are the best in many years.

Mosquito Netting Needed in Portugal.—United States Minister Charles P. Bryan, under date of Lisbon, reports that Portugal offers an excellent market for doors and wire screens for windows, which are unknown in that country. The swarming of flies, mosquitoes and other insects nine months of the year would appear to make the demand for such protection universal.

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

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List, \$4.15

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THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 3/4 cubic feet. This cut represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/4 inches deep and 32 1/4 inches long. Made of selected quarter-sawn oak and handsome polish finish.

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IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

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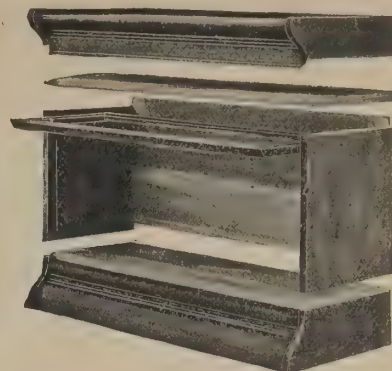
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The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

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This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



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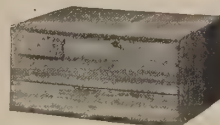
11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



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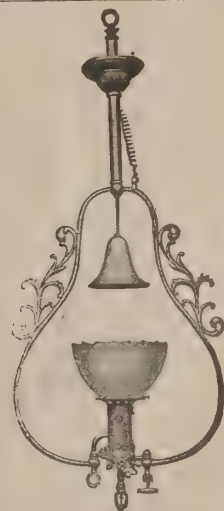
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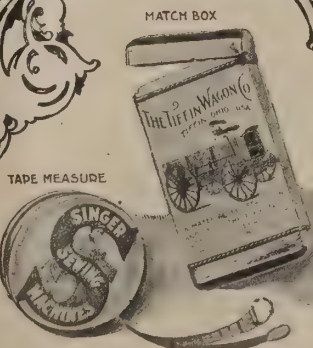
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How Modern Cities Benefit by Electricity.

THE American electric engineer is a versatile and ingenious promoter of improved conditions in the social and industrial world. Prof. H. B. Smith, of the Worcester (Mass.) Polytechnic Institute, in a recent address, directed attention to the value of electricity to the modern city. Two important developments in the field of electrical engineering have had a far-reaching influence upon social manufacturing interests. One of these developments is the long-distance transmission of power, which, on the Pacific Coast and at other points, has wrought a veritable industrial revolution. As Professor Smith remarked:

"In San Francisco a few years ago the cost of electric current for power and light was 15 cents for one horse-power per hour, while to-day the published price is almost exactly one-seventh of this amount, and it is possible to deliver at the factory on the coast, from the melting snows and glaciers of the Rockies, power for the machinery at a smaller cost than at which it is possible to produce that power by steam, even though the fuel were to be delivered at the factory boiler without cost to the power producer.

"The power transmission systems of the Pacific Coast are developing at a rate which is the best possible demonstration of the accuracy of this statement, as the discovery of fuel oil in large quantities on that coast has caused no decrease in plants for, and actual installation of, plants for the electrical transmission of power to points where such fuel can be had for little more than the bare cost of feeding it to the boiler from an adjacent oil well.

"It has been estimated that the quantity of carbonic acid annually exhaled by the population of New York City is about 450,000 tons, and that this amount is less than 3 per cent. of that produced by the fuel combustion of that city, so we may expect that, with the removal of this great source of contamination of the atmosphere, even the air of our greater cities will be practically as pure as that of the country.

"This fact, with many others pointing in the same direction, together with the entire possibility of such power transmission from a purely engineering standpoint, make it no unsafe prediction that in the near future many of the large cities of the world will not see coal except in their mineralogical collections.

"The second and more important development to which particular attention should be given is largely dependent upon this already successful accomplishment of electric power transmission, but has for its field of application the highly important service of railway transportation. The service of our steam railways, contributing so largely to our rapid development as a nation, is meeting a new element which has already wrought great changes in methods of transportation in some localities and is rapidly extending its influences throughout the world. Many of the existing steam railways have failed to recognize the significance of the possibilities of electric railway transportation, and have met its development at every point with vigorous and determined opposition, which in the end can only react upon those maintaining such opposition."

Nature's Battery Worked Telegraph Wires.

ONE of the most remarkable electric freaks occurred early in November, when messages were sent over a 650-mile circuit on the Northern Pacific telegraph lines without batteries, the power being supplied by electricity in the atmosphere, due to the aurora borealis. The superintendent of the company describes the event as follows:

"We found that the electricity from the overcharged atmosphere registered from 23 millimeters positive back to the same figure negative. Pure-green light shot forth at stated intervals toward the earth, and each time it descended it charged the electric wires all over the country to such a degree that all communication was stopped for a time and disturbed for many hours.

"The electrical waves came with the regularity of the pendulum movement. They were of about three minutes' duration each, shifting from negative to positive polarities in almost perfect rhythm. Our instruments showed a maximum intensity of 370 volts.

"When the current was at its maximum positive polarity we could talk to Dickinson very easily by using the regular Morse alphabet. As the pendulum swung back to the negative pole the sounds from the instruments would become fainter and fainter until the pressure came back. Our volt meter was not of high register, 300 volts being its limit. The disturbance commenced at 2 o'clock in the morning and lasted until midnight. It was one of the most remarkable atmospheric disturbances that has come within my knowledge for thirty years."

Increased Use of Electricity in Mills.

ELECTRIC power in place of belting and shafting has been extensively applied in the United States to textile mills and factories generally. The introduction of the steam turbine in place of the ordinary reciprocating engine will hasten and further extend the application of electric motors. The reason is that the steam turbine has so many advantages over the steam engine that it will in time supplant it. At the high speed of turbines, electric generators and motors provide the most economical means of transmitting power and applying it to the operation of machines. The practical elimination of repairs, the freedom from the necessity for adjustment (so necessary to the ordinary engine) and care and attention, the absence of internal lubrication

permitting the condensed steam to be returned to the boilers and avoiding boiler scale by using the same feed water continuously, the lessened floor space, reduction of weight and cost and higher economy are all features in favor of the steam turbine. The requirement of constant speed so desirable for textile mills is obtained by the turbine and electric power to a more thorough degree than with any other system. The first electric generators driven by steam turbines to be used in textile mills will be installed in Southern mills. Three 500-kilowatt turbine units are going in at the Lane Cotton Mills, New Orleans, and two of the same size at the Fulton Bag and Cotton Mills, Atlanta, Ga.—*The Tradesman*.

Electric Mules as Power on Canals.

THE type of motor which has been publicly and privately tested on the New York State canals in the last few days for hauling canalboats possesses several features which distinguish it from any of the dozen or more already tried in this country and Europe. The machine is virtually an electric locomotive, running upon a railway along the tow-path, and hitched to a rope which pulls the boats. It rides upon a single rail, but in order to accommodate motors drawing boats in the opposite direction a second rail is provided, parallel with and near the first. In a certain sense this road is elevated. For a reason about to be mentioned, it is necessary to have a portion of the mechanism reach under the rail, as well as above it. To be more exact, the lower part of the machine extends under the stout I-shaped steel beam on which the rail rests. But the principle and requirements are the same. Space enough to allow freedom of movement must be left between the permanent structure and the ground.

The most novel feature of the design is the method by which "adhesion" is secured. Weight alone might not suffice. Consequently, means have been provided for gripping the railway between the wheels above and the wheels below. Such a pressure can thus be brought to bear that slipping is almost impossible. The same idea has been worked out in another way by electrical engineers at Budapest. When a competitive trial was made on a canal near Berlin a few months ago, a motor supplied by a particular firm was one of twenty that were tested, and it gave more satisfaction than most of its rivals. In this motor a solitary rail was embraced between two wheels that slanted toward it, one on each side. In the American machine the grasp is more direct, and is exerted vertically. No doubt there are other features which differentiate it still further from the Hungarian model.

The motive power used with the latest American machine is electricity. Gasoline or even steam could be used instead, but they have their disadvantages. In the pending experiments a direct current is used, but in case the system is ever installed it is thought that an alternating current would be employed. That is a comparatively unimportant detail. The current is now taken from an overhead wire by the typical trolley pole. For these features the third rail and sliding shoe might, perhaps, be substituted. Still, the form of conductor is not essential. The main novelty is the gripping mechanism whereby adhesion is obtained.

The machine now on trial weighs 12,000 pounds (six tons), and can develop 80 horse-power. Any speed which may be thought desirable can be got out of it. The designer is said to be an engineer of the New York Rapid Transit Commission. To construct a mile of railroad of the type here outlined would probably cost \$18,000. These figures do not include the motors.

Cheap Illumination in an American City.

NO city in the United States, perhaps no city in the universe, has lights as cheap as the city of Assumption, in the State of Illinois. So cheap are the lights that the residents have their barns as well as their residences brilliantly lighted at night with electricity. The business houses are charged 10 cents a light per month. The City Hall and other public buildings that belong to the city are lighted for nothing.

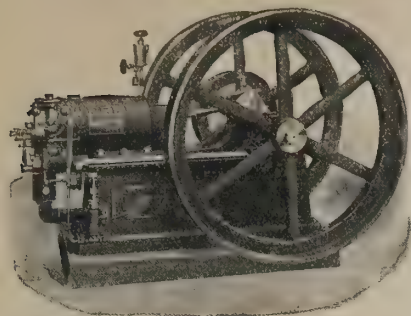
According to reports, the business there is conducted more for fun than for money. There are two electric light plants in Assumption, and competition between the plants has sent the price of electricity down to a mere song.

At the last meeting of the City Council both plants put in a bid for lighting the city buildings. One company made a bid for the work at \$10 a year. The other company, not to be outbid, offered to furnish the lights free, if permitted. The latter offer was accepted.

Novel Safety Idea for New York Subway.—The electro-pneumatic signaling system to be installed on the tracks of the New York City subway passenger railroad will contain a novel feature, in that the system will be operated by alternating current instead of battery current or direct current, as generally used. The necessity for this feature lies in the use of direct current on the rails for the propulsion of the cars, and the danger therefore of this current disturbing the signals. This difficulty is avoided by employing devices which are sensitive to alternating current only.

Like American Dynamos.—J. C. Covert, United States Consul at Lyons, says: "The far greater number of dynamos used in France are made at the Westinghouse and Thompson-Houston Works in Havre and Paris. Men in electrical enterprises in this country say that the great obstacle to receiving their machinery direct from the United States is the high freight rates and the customs duty at French ports."

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We make a specialty of Steam Engines and Gas and Gasoline Engines and Pumps from a 1 H. P. Combined Engine and Boiler for \$100 and a 2½ H. P. Gasoline Engine for \$125 up to any size in either Vertical, Horizontal, Marine, Hoisting, Pumping, Locomotive and Portable Engines on Wheels.

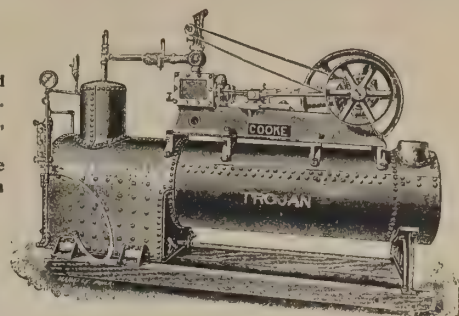
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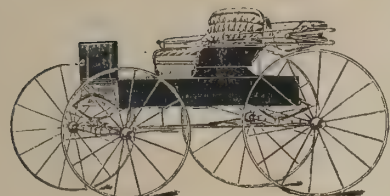
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Trimmings and finish the best obtainable.



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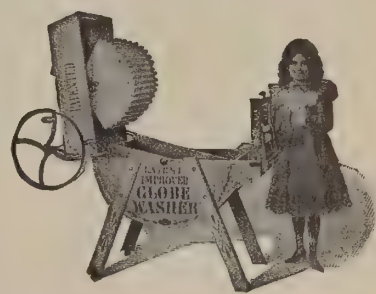
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5 Dozen Pairs.....	4 x 5	7½ Dozen Pairs.....	7 x 9
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Size of case, 42x23x18 inches.



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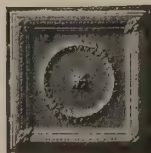
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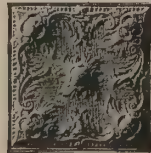
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Machines to Take the Place of Sculptors.

AMERICANS have taken much interest in reports from abroad regarding the latest development in labor-saving machinery, and an account of the new sculpturing machine which appears in the *American Inventor* is worth reading. There have been previous mentions of this invention, but heretofore no authoritative information has been given on the subject in this country. The writer says: "The general trend of labor-saving inventions to-day seems to be in the direction of improvements of the decorative arts, as well as practical arts. It is true that wallpaper is still designed by hand, but it is duplicated by machinery. The artist in dry-point does only the initial work by hand and sees the finished production come off the printing press. The lithographer's product is half mechanical, and now from London come accounts of a sculpturing machine, which, if not itself an artist, is at least a more perfect copyist than any human laborer could possibly be.

"Near London is in operation a complicated looking, square-set machine, the result of the inventive genius of an Italian sculptor called Bontempi. Sir A. Conan Doyle, the famous novelist and historian, together with W. G. Jones, brought the machine to England and have undertaken to exploit it to English art circles. To fully understand the machine and the benefits which are claimed to result from its use, it is necessary to understand how a statue in marble is at present made from clay. A London journal in commenting upon this feature says that at present when a sculptor has completed his clay model of the statue, which is eventually to be seen in marble, he hands it over to a man known as a 'pointer,' who by the aid of an instrument of that name drills hundreds of tiny holes of various depths in the block of marble which is to be carved into an exact resemblance of the clay model. As many as 15,000 of these small holes have been bored for carving one bust.

"When all the holes have been drilled there comes the man with the chisel and it is his laborious task to chip away the marble, guided by the depths of the holes. When he has finished the sculptor puts in a few touches and the bust or statue is completed. But it is a business which takes, on the average, six weeks to do. The machine at Battersea will finish the work in half a day.

"The machine can work thus quickly, because where the human workman delivers one stroke with his chisel the machine can deliver a hundred. Moreover, working upon the principle of the pantograph it is absolutely accurate and has no fear of making a mistake.

"A long metal pointer delicately balanced and capable of movement in any direction, can be brought into contact with the face of the model. Every movement of this pointer causes an exactly similar movement in two steel drills which play upon the surfaces of the marble blocks. It is obvious, therefore, that inasmuch as no movement of the model is without an exactly similar movement in the blocks and no movement of the pointer can be made without a similar one being made by the drills, it is only necessary to run the pointer delicately over the face of the model to cut out a similar face from the marble blocks. As the pointer cannot go below the surface of the model, the drills are in no danger of making a mistake and taking out too much from the surface of the marble.

"In the same way a statue could be made direct from the living face, although a slight modification of the model support would have to be made. In practice the machine is stopped several times during the operation of duplication in order to introduce finer and finer drills, until at the end of the operation, which takes for an ordinary life-size bust from six to eight hours, the surface is as smooth and delicate as if carefully and laboriously chiseled by the hand of the artist.

"The machine is operated by hydraulic power, but, of course, electricity or steam could easily be substituted. Mr. Jones, one of the gentlemen who is engaged in exploiting the device, says the machine as it at present stands is worth \$2,500, but that less than 50 cents per day is required to run it. It is also pointed out that a chiseler who could do similar work to that of the machine by hand would get from \$20 to \$60 per week and would take a month for a job. It is obvious, therefore, if the machine will do the work to the satisfaction of artists, wherein the profit of its operation will lie."

Fixing Money Value of Radium.

WITH reference to the value of radium, radium chloride of the activity of 240 sells for about \$30 an ounce, says *The Review of Reviews*.

The radium salts used in the recent experiments at the American Museum of Natural History, 127 milligrams—equal to about one-eighth of a gram, or 1-249 of an ounce—represented a value of \$274, or at rate of \$64,800 per ounce troy. This radium was of the activity of 300,000.

The museum ordered, at the request of Edward D. Adams, of New York City, as a gift to carry on the investigations, radium of an activity of 1,800,000, valued at \$660 for 100 milligrams, or at the rate of \$198,000 per ounce. The small sample used represents the concentration of more than one ton of pitchblende; the 1,800,000 sample, probably, the concentration of four or five tons, and yet the entire quantity could be put in the end of a thimble and not occupy one-fourth of the space remaining between that and the finger. Radium compounds with an activity of 40 can be bought for \$20 an ounce. It is only when it has been fractionated and increased in its activity that it becomes very costly—like steel, itself worth only a trifle per pound, but worth many times the value of gold when manufactured into watch-springs.

The Farmer and the Automobile.

THE automobile will not milk the cow nor tend the baby, but it will churn the butter and grind the cornmeal and do pretty nearly every other kind of work on the farm. After the farmer sees the exhibit of farm implements made by the manufacturers of South Bend, Ind., U. S. A., at the World's Fair, to which the South Bend *Tribune* calls attention, and in which the automobile plays a stellar rôle, much of the antipathy formerly felt by the ruralist for the horseless carriage will be removed. Of course, the South Bend manufacturers will not neglect the auto as a pleasure vehicle, but it is the uses to which the machine may be put on the farm that will prove most novel and interesting.

An automobile with a plow attachment will be in operation, showing how much faster the soil can be turned with the new power than when the plow is drawn by horses. The automobile harrow will make Dobbin turn green with envy, so much more smoothly does it glide over the field. Another exhibit will show the automobile used as a farm wagon. The practicability of mowing hay and wheat with agricultural automobiles will be demonstrated. The traction engine used by threshers has paved the way for the automobile in this field, and it will not appear as so great a novelty.

The versatility of the automobile will be demonstrated when it is seen, as it actually will be, in the palace of agriculture, grinding grain. The same machine that conveys the farmer and his family to church on Sunday may be placed in the barn on week days and the wheels, as they turn upon certain riggings in the floor, will grind the farmer's grist. This is not all of the uses the automobile may be put to on the farm. There are many others, and all will be shown at the World's Fair. South Bend is a great manufacturing center, and she will make an exhibit that will call attention to her importance.

United States Tests Automatic Rural Letter-Carrier.

AN American genius living at Corning, Ia., Nelson S. Howell by name, has invented an automatic rural free-delivery carrier that he wants adopted by the United States Post-Office Department. The apparatus is very simple and will be considered seriously by a commission from the Department, which will visit a locality where a rural free-delivery route, thirty miles long, fitted with the automatic carrier and making deliveries every hour, is in operation.

The idea of the invention is to carry the mail with a cable attached to telephone poles and similar available supports, and which will be automatically regulated by clockwork so as to drop the mail off along the line to the person to which it belongs. Each person will have a number, and the mail is so placed in the carrier that when it comes to each station the mail allotted to that place will drop in the letter-box, the carrier continuing its journey to the next station.

The short line already established has given great satisfaction, not only because of the accuracy of the apparatus, but because mail deliveries can be made as frequently as desired. The cable of a thirty-mile route can be moved by one and a half horse-power gas or hot air engine at a speed that can be regulated at will.

World's Demand for Tool-Making Machines.

THE *Deutsche Industrie Zeitung*, in a recent issue, calls attention to a congress or convention of Germany's tool-machinery makers. Reports made by those present went to show an increase of business in the Empire, but the orders were not large enough nor the prices satisfactory. The orders from the Government were not nearly as large as desired. Complaint was made against the custom of the large iron mills of contracting for machinery only on condition that part payment be made in the iron or steel products of the mills. Another evil complained of is the custom of the German iron or steel mills of making their own conditions when contracting, instead of following, as formerly, well-established customs. In the matter of contracts in which it is provided that the toolmakers take steel or iron from the mill great abuses have crept in. Reports made to the convention regarding Germany's foreign trade show a decline. In France everything was quiet. Italy offered little encouragement. Spain promises great things by and by, particularly for the marine. The United States, it was said, must be given up as hopeless because of its own development of machine making.

Parcels Post Treaty with Hong Kong.—United States Postmaster-General Payne and Arthur Raikes, Chargé d'Affaires of the British Embassy, at Washington last month signed the parcels-post treaty between the United States and Hong Kong, which has been in preparation for some time. The treaty is practically the same as the parcels-post convention now existing between the United States and Germany, except that the weight limit of packages is four pounds six ounces in the new treaty, instead of eleven pounds, as in the old convention. The treaty was later signed by the President and will go into effect on January 1, 1904.

Changes in Manufacturing Company.—Irving H. Reynolds will shortly retire from the Allis-Chalmers Company, and the duties of chief engineer will be assumed by the engineers in charge of the various departments. These engineers will avail themselves of the advice of Edwin Reynolds, consulting engineer of the company.

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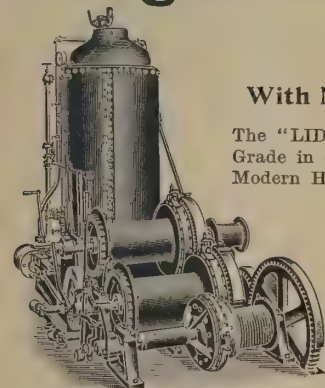
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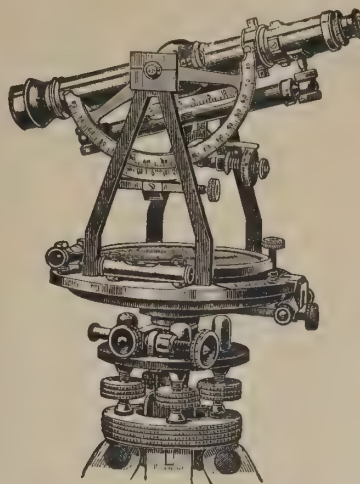
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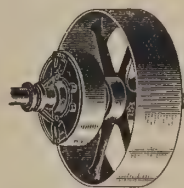
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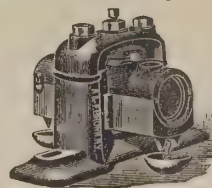
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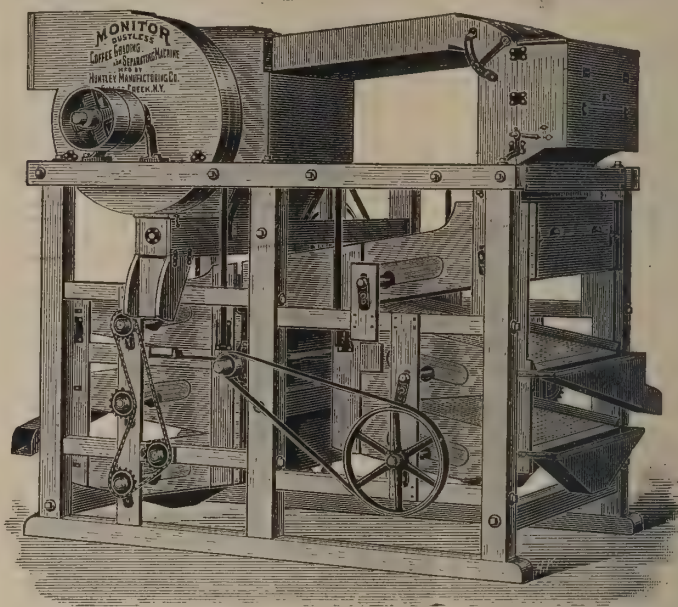


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This machine removes all foul material and fragments, makes clean separations and grades perfectly in five sizes: Large, medium and small flats, large and small peaberry.

Made in five sizes, and capacities from 6 to 30 bags per hour.

Monitor Rice Separators are used more extensively in the rice industry than any other make of machine.

Monitor Grain, Cereal and Seed Cleaners are unequalled for quantity and superiority of work and low operating expense.

Send to-day for our Illustrated Catalogue of the entire Monitor line, with export prices F. O. B. steamship, New York City.

HUNTLEY MFG. CO., Silver Creek, N. Y., U. S. A.

The Standard Fans.



Style B Fan with Regulating Switch.

Our Fans are used in all parts of the world. Our experience with foreign requirements enables us to meet all conditions, especially in respect to special insulation. Other strong points are, artistic design, high finish, economy in operation and blade-carrying power.

Recommendations of our customers are our best guarantees.

**CEILING, DESK and BRACKET types, for
all direct-current circuits.**

New twelve-page circular of our Protected Type Dynamos and Motors ready for distribution. Yours for the asking.

THE ROBBINS & MYERS CO.,
SPRINGFIELD, OHIO, U. S. A.

Friedman Bros Shoe Co.

ST. LOUIS, U. S. A.

MANUFACTURERS OF

Shoes for Export

TO ALL PARTS OF THE WORLD.

Established 1854.

Before a critical public a half century, the "Friedman Shoe" now, as ever, stands supreme.

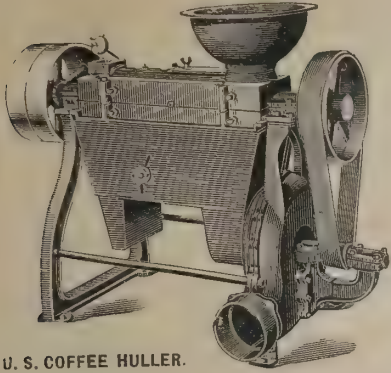
OUR FACILITIES:

Two mammoth electrically equipped factories with a capacity of 10,000 pairs daily; over 100,000 square feet of sales and store rooms; a well-organized foreign department for our export trade exclusively; unexcelled warehouse and shipping capacity.

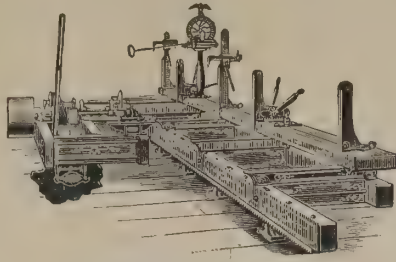


We solicit trial orders from responsible houses, assuring lowest prices and prompt shipment.

Further information, as well as Illustrated English or Spanish Catalogue, sent on request.



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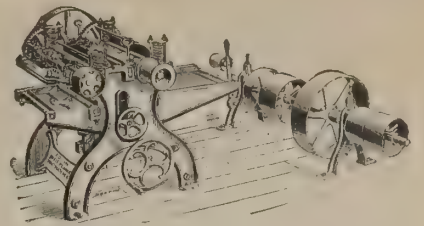


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We build a complete line of Machinery for Handling the Coffee Crop, also Large and Small Saw Mills to suit all conditions, and Wood-working Machinery. Write for Catalogue, Spanish or English.

NEW YORK Office, 2 & 4 Stone Street.
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SALEM IRON WORKS, Winston-Salem, N. C., U. S. A.



20-INCH DIXIE PLANER AND MATCHER.

For dressing and tonguing and grooving lumber, such as siding, flooring, ceiling, etc.

A. B. FARQUHAR & CO.,

Cotton Exchange Bldg., New York, U. S. A. Cable Address: "Fenankle," N. Y.

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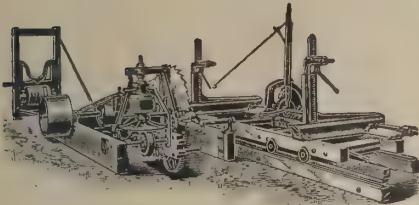
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including **Engines and Boilers**—Vertical, Horizontal, Stationary and Portable; **Threshers**—for Wheat, Oats, Rice, Etc.; **Circular Saw Mills**; **Plows**—Steel and Cast Iron; **Cultivators**—Walking and Riding; **Harrow**s; **Grain Drills**—suitable for every Country; Etc., Etc.

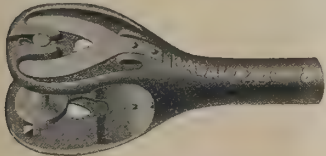
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Write for Illustrated Catalogues and Prices.

Correspondence in All Modern Languages.



KALAMAZOO TROLLEY WHEELS AND HARPS



KALAMAZOO HARP.

Have been adopted exclusively by over 300 companies, operating 28,000 cars in the United States, and are now being installed upon all principal electric lines throughout the world.

SPECIAL SAMPLE OFFER FOR EXPORT ONLY.

Kalamazoo Trolley Wheels, \$12.50 per dozen. Will fit any standard harp.
Kalamazoo Harps, \$12.00 per dozen. Made for standard wheels and poles.

The prices quoted include boxing, ready for steamer, f. o. b. cars, New York.

With the view of facilitating our EXPORT TRADE, we desire to communicate with one responsible electric power company in each trade-center of the world.

THE STAR BRASS WORKS,

The Largest Exclusive Trolley Wheel and Harp Makers in the World,

KALAMAZOO, - - - MICHIGAN, U. S. A.



KALAMAZOO TROLLEY WHEEL.

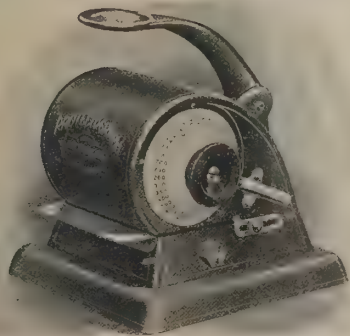
Thousands of Protectographs

Are now in daily use by the leading financial, industrial and mercantile institutions of America, and are exclusively employed by the United States Government.

The machine is a marvel of simplicity, being but six inches square and weighing only ten pounds, boxed ready for shipment. One movement of the lever indents the limiting line upon any preferred part of the check (see reduced facsimile of check) and by its system of compound levers forces an especially prepared indelible ink into the fiber of the paper, making it a part of the document itself and rendering its removal impossible.

The Protectograph is made to conform to the monetary standard of all countries and to print in any language. The price is \$30, delivered New York City.

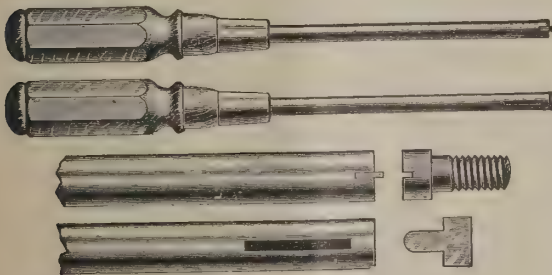
G. W. TODD & CO., Mfrs., 40 Trust Bldg., Rochester, N. Y., U. S. A.



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Orders executed either direct or through export commission houses.

Two Good Ones.

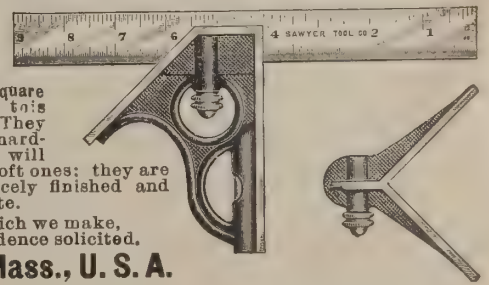


THE SAMSON SCREW DRIVER, No. 125, is a screw driver constructed to stand not only the use but the abuse to which such tools are subjected. They have inserted bits, as shown in cut, and are very easy to replace after being worn out or broken.

Send for our Catalogue E, describing the line of tools which we make. Orders filled through commission merchants. Correspondence solicited.

SAWYER TOOL MFG. CO., Fitchburg, Mass., U. S. A.

No. 38 COMBINATION Square is the best tool of this description made. They are fitted with hardened blades which will outwear a dozen soft ones; they are neat in design, nicely finished and guaranteed accurate.



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SOLE MANUFACTURER AND EXPORTER OF

Herculene Cold Water Paint.

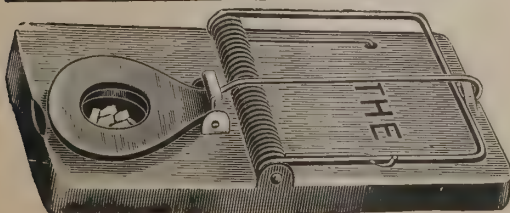
Used both for outside and inside work. Sanitary, fireproof and durable. A substitute for paint, whitewash and kalsomine. Packed in dry powder form. Five pounds make a gallon of paint. Used universally in factories, warehouses, public buildings, etc. Orders filled through commission houses. Correspondence solicited. Catalogue D on application.



"THE" Mouse and Rat Trap. WHY?

Because, as compared with all other traps, it is **SUPERIOR**. All Metal Japanned. It Catches. Easily Cleaned. Easily Set. The Best Trap Made. The **BAIT BOX** is the best manner of baiting a trap that has ever been invented, and the bait cannot be eaten by a mouse without springing the trap. This is not a cheap trap, that is a mere excuse; it is substantial and durable, and it catches. It pays a good profit to the merchant and gives satisfaction to the customer. They are made to catch rats and mice, and they catch them.

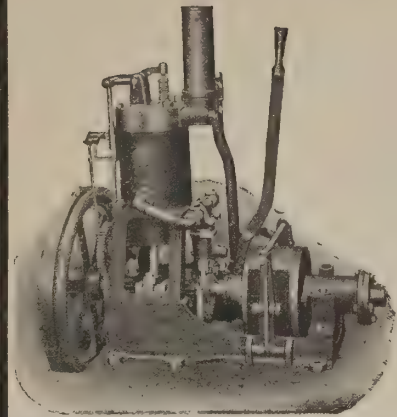
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MARINE GASOLINE ENGINES

1 3/4 H. P. to 500 H. P.

"HERCULES"



High speed launch engines—one, two and three cylinders from 1 3/4 H. P. to 150 H. P.

Heavy duty engines for main or auxiliary power in vessels—two and three cylinders from 30 H. P. to 500 H. P.

Over 5,000 Hercules Engines Sold

We want responsible agents in several more foreign countries.

HERCULES GAS ENGINE WORKS, San Francisco, California.

"SUN"

Gasoline (Petrol) Incandescent Lamps.

Every Light Is a Complete Gas Plant.
Magnificent Illumination.
Economical! Safe! Powerful! Convenient!
Fully Protected by Original Patents.
Beware of Infringements and Cheap Imitations!
Ten Times More Light Than Electric, Incandescent or Kerosene Lamps.
Have Them in All Styles from 100 Candle-power Up.

Also Beautiful "SUN" Incandescent Gasoline Street Lamps,

Most Suitable for Foreign Trade.

Every important city uses our street lamps. Our indoor lamps are used in thousands of homes, stores, shops, churches, halls, theatres, billiard-rooms, hotels, lodgerooms, ballrooms, etc.

Write for Catalogue and Export Prices.

The Sun Vapor Street Light Co.

1004 South Market St., Canton, Ohio, U. S. A.

Established 1875.



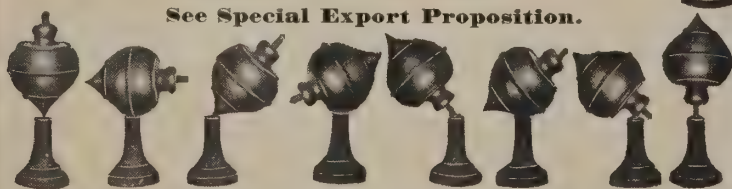
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THE WORLD'S GREATEST MECHANICAL TOY

Irving's Wizard Top
IS A Scientific Wonder.

A Top within a Top. Made of STEEL, nickel-plated. Is a veritable **Rotary Engine**, gyrating in contrary directions while running at full speed. Its average spin is 8 minutes. Performs over 40 tricks. A child can spin it in 3 seconds. It maintains its equilibrium at any angle. Walks a tight or slack wire. **Has no equal in the novelty world.** Sells at sight. Over 500,000 sold in 17 months in the United States. The accompanying cuts illustrate only a few pedestal tricks.

See Special Export Proposition.



\$18.00. Upon receipt of Eighteen Dollars in U. S. gold, or its equivalent, we will box ready for steamer, f. o. b. cars New York, one (1) gross of the Tops, with Trick Outfits complete. Size of case, 24x12x11 in.; gross weight, 54 lbs.

Prompt Deliveries and Entire Satisfaction Guaranteed. ORDER NOW!

WIZARD NOVELTY CO., Inc., Philadelphia, U. S. A.

"St. Louis A. B. C. Bohemian."

"KING OF ALL
BOTTLED BEERS"

(Trademark.)

AMERICA'S
FAMOUS
BOTTLED BEER.

Brewed and bottled expressly for the

EXPORT TRADE,
and sold in all civilized lands. Beyond all comparison the finest of bottled beers. Importers are invited to write direct to

THE
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Co., St. Louis, Mo.,

United States of America.



"Famous the World over"

"KING OF ALL
BOTTLED BEERS"



"Famous the World over"

Orders filled through export agents and also through FRANK S. DE RONDE CO., New York. Always mail us duplicates when ordering through commission houses.

TARR & WONSON'S
COPPER PAINT,

for Wooden Vessels' Bottoms,
prevents boring of worms and all marine growth.

Awarded Eight Highest
Medals:

Gold, Silver
and Bronze.

Excels on
Every Point.

Cheapest to Use
in the End.



THE WORLD'S STANDARD FOR FORTY YEARS.

RACING COMPOUND for Wooden Yachts' Bottoms,
Bright and Smooth.

Manufactured Only by TARR & WONSON, Limited,
GLOUCESTER, MASS., U. S. A.



Moerlein's Beers
STANDARD
OF PURITY AND WHOLESOMENESS.
THE CHRISTIAN MOERLEIN BREWING CO.
CINCINNATI, OHIO.

The "New American"

IS THE
Turbine for Export.
Why?

Strength, durability and interchangeable parts reduce repairs to a minimum.

Great power for the diameter.
Economy in use of water.

Vertical or Horizontal Installations
to meet requirements.

Our Catalogue, which will be mailed on request, furnishes detailed description.
We also manufacture Gas and Gasoline Engines, Paper and Pulp Mill Machinery, and a full line of Power Transmission Machinery.

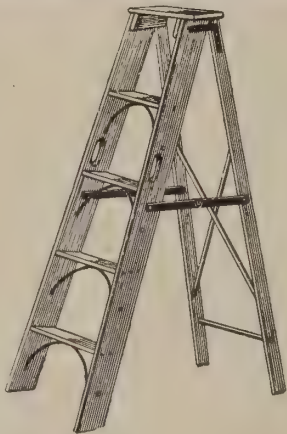
**THE DAYTON GLOBE
IRON WORKS CO.,**
DAYTON, OHIO, U. S. A.

C. W. H. MOULTON & CO.
SOMERVILLE, MASS., U. S. A.

Manufacturers and Exporters of

LADDERS

Patent Extension Ladders,
Full line of Step Ladders,
All kinds of Single Ladders,
Lawn Settees,
Ironing Tables,
Wash Benches,
Clothes Dryers,
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Patent Fire Ladders.



Orders filled through commission houses. Correspondence solicited.
Catalogue "M" on application.

NEW ENGLAND BUTT CO.

PROVIDENCE, R. I., U. S. A.

MANUFACTURERS AND
EXPORTERS OF

**Braiding
Machinery**

For all styles and kinds of Braided
Fabrics, Round and Flat Braids,
Solid Sash and Curtain Cords, Shoe
and Corset Laces, Banding, Candle
Wicking, Etc. Prices,

\$10.00 to \$160.00

Also a full line of Machinery for Insulating Electrical Wires and
Cables, Measuring, Winding and Taping Machines.

ORDERS FILLED THROUGH COMMISSION HOUSES AND CORRESPONDENCE
SOLICITED. CATALOGUE "K" ON APPLICATION.
LIEBER'S CODE USED.

You Take Absolutely No Chances
IN BUYING THE WONDERFUL



(For Water Tube Boilers)

The same machine can also be used for return tubular boilers, which
is provided with a hammer instead of cutter as it appears on this cut.

DIAMOND BOILER TUBE CLEANER.

The only known and successful device for removing scale and soot from return
tubular or water tube boilers. Same machine can be used for both styles of boilers by
changing the hammer. From 20 to 60 per cent. in fuel saved;
prolongs the life of boilers, and is the means of avoiding
possible accidents. Our Diamond Cleaner is in use in every
part of the world, to whom we can refer you. Every Diamond
Machine bears this trademark and is also stamped with our
name.

FREE TRIAL.

POWER SPECIALTY COMPANY,

Sole and Exclusive Manufacturers,

Bridgeburg, Ont., Canada. Berlin, German y

Address for particulars **Buffalo, N. Y., U. S. A.,**
Department "A," 361 Washington Street.

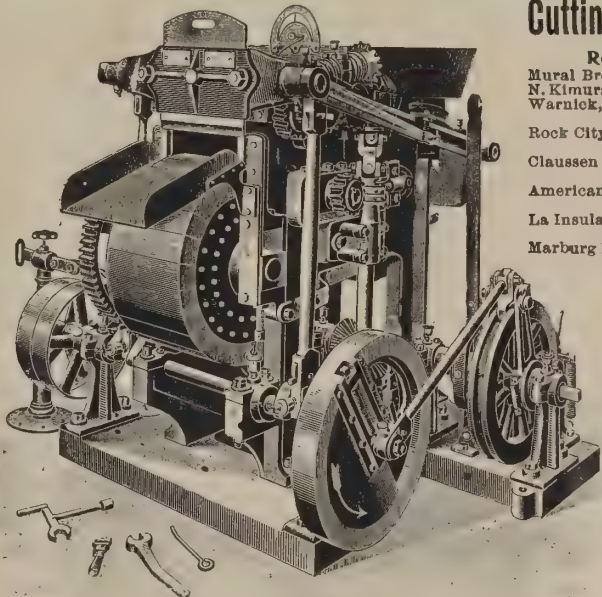


**"American" Cigarette, Long, Plug and Flake-Cut Tobacco
Cutting Machine.**

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American Tobacco Co.,
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Md. 2 machines.
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Phila., Pa.
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tersen & Co.
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Mexico.
German
Moreno,
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And others
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placed
throughout
the world
by Export
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Houses.

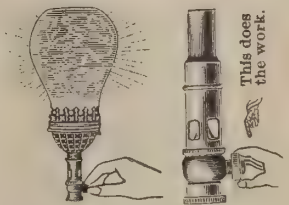


For prices and full particulars write

JOHN B. ADT MACHINE WORKS, Baltimore, Md., U. S. A.

"SUVLIGHT," THE LIGHT OF THE AGE.
Patent No. 788160—150 candlepower—saves 80 per cent.
of gas and gives a beautiful electric effect.

Never Blackens Mantles.
Incandescent Burners, as generally constructed, give
much annoyance and trouble always to get the exact mix-
ture of gas and air to make the most effective combustion,
but with "Suvlight," by the simple movement of the thumb,
the exact proportion of gas and air and the highest possible
illumination are instantly obtained. Adapted for all kinds of
lamps, mantles and any variation of gas pressure. It is the
long-felt want in private and business houses. Write for
lowest export prices.



**"SUVIO" GAS
HEATERS**

Introduced into the Whole World. Good for All Seasons,
"Suvio" has stood the test of time. Name "Suvio" and
Patent Nos. 571916, 27876, 573205 stamped on top of each
heater. If you handle similar heaters be sure they are not
infringements, and thus render yourself liable for damages.
"Suvio" is the real thing—better and cheaper.

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1079 Third Ave., 40 West Broadway and 59-61 Park Place,
New York, U. S. A.



Palmer Gasoline Engines and Launches.

Over 9000 in Successful Operation.

PRICES FOR EXPORT ONLY:

1½ H. P. Two-Cycle Marine Engine	\$ 75.00
3 " " " "	90.00
5 " " " "	150.00
7 " " " "	175.00

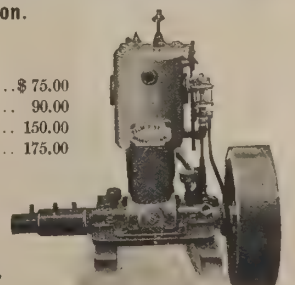
Four-Cycle Motors from 3 to 32 H. P. each.

Automobile Motors and Complete Launches.

Send for Catalogue.

PALMER BROS.

COS COB, CONN., U. S. A



HAVE YOU SEEN THE



Schroeder Rotary Washer?

It is the most perfect and successful Rotary Washer on the market. The tub is made of red Louisiana cypress, which will not fall apart. All castings are finished with rust-proof aluminum paint; all iron parts coming in contact with the clothes are heavily galvanized. We also make other washers. For particulars address

BENBOW-BRAMMER MFG. CO.,

Factories: { St. Louis, Mo.
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St. Louis, Mo., U. S. A.

BUCKEYE IRON & BRASS WORKS,

DAYTON, OHIO, U. S. A.

MANUFACTURERS OF

Linseed and Cotton Seed Oil Machinery.

TOBACCO-CUTTING MACHINERY

For making Fine Cut, Smoking, Cigarette and Picadura Tobaccos.

HIGH STANDARD BRASS GOODS

For Engine Builders, Gas and Steam Fitters.

WRITE FOR CATALOGUE.

"NEW JERSEY" COPPER PAINT



A PAINT THAT PROTECTS.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.
MILLS EDWARD, Master Schooner "Florence Shay."

LEADS THEM ALL,

So Our Testimonials Say.

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition and American Institute, New York City.

New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

Shoe - Upper Leathers OF ALL KINDS.

The American Shoe Manufacturers' Export Co. begs to announce that its LEATHER DEPARTMENT, which is under the direction of experts, can supply all kinds of Leather in large or small quantities at short notice. Skins carefully selected and each one inspected before shipment and securely baled, boxed or otherwise packed strictly in conformity with instructions.

SEND US SAMPLES OF WHAT YOU USE AND LET US QUOTE PRICES.

Our Shoes Are Famed All Over the World.

We make more than 500 different kinds for men, women and children—from the cheapest to the best. We also manufacture Shoe Uppers, that is the shoe complete without soles or heels. Send for samples.

Our DIAMOND BRAND SHOE DRESSINGS are the best on the market, but priced lower than other makes.

American Shoe Manufacturers' Export Co.,

28 SOUTH WILLIAM STREET, NEW YORK, U. S. A.

President: FRANK BORN, of Bornn & Co., Exporters and Importers, New York, U. S. A.

AGENTS WANTED EVERYWHERE FOR

THE BEST LIGHT



The Cheapest and Strongest Light on Earth.

Makes and burns its own gas. It is portable; hang or set it anywhere. Requires no pipes, wires or gas machine.

A Safe, Pure White, Powerful, Steady Light. Permitted by Fire Insurance Underwriters.

No wicks to trim; no smoke or smell.

SUPERIOR TO ELECTRICITY OR ACETYLENE AND CHEAPER THAN KEROSENE.

Saving effected by its use quickly pays for it. Over one hundred styles of fixtures for indoor and outdoor use. This is the Pioneer Incandescent Vapor Gas Lamp. It is perfect. Beware of imitations.

Write for Catalogue, Lists and Discounts. Orders received direct or through exporting houses.

Manufactured by

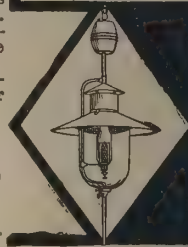
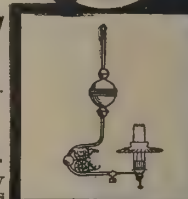
The BEST LIGHT CO.

73 E. 5th St., Canton, Ohio, U. S. A.

Cable Address: "BEST," Canton, Ohio.

Codes used: Liebers, A B C, 4th Ed., W. U.

Tel. Co. and Our Own.



PRESIDENT SUSPENDERS.

The Great Suspender Success. Ask any American. Wears Well. Sells Easy. Guaranteed.

All Breaks Made Good.

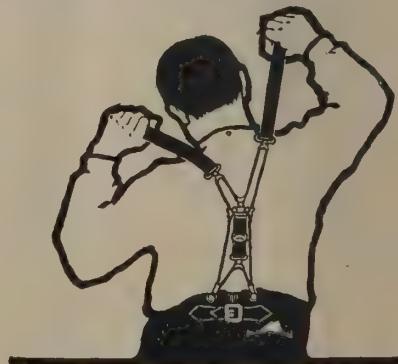
Sample pair, postpaid, 50c.

Thirty dozen or more, \$3.50.

Less than thirty dozen, \$4.15.

Net spot cash;

f. o. b. New York.

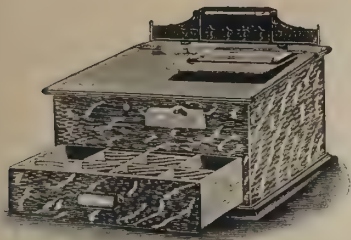


Showcards in Every Box.

THE C. A. EDGARTON MFG. CO.,

Box 402, SHIRLEY, MASS., U. S. A.

"SECURITY" Cash Recorder



No. 85.

The only machine that gives you an absolutely correct record of EVERY transaction from the time your store opens until it closes, and making it out of the question for your cash NOT to balance.

Write for Circular and Prices to

HOUGH CASH RECORDER CO.,
INDIAN ORCHARD, MASS., U. S. A.

HYDRAULIC BALING PRESSES.

For Baling Cotton, Wool, Rags, Hemp, Etc.

Simple, compact and very powerful; worked by either hand or steam power; not liable to get out of order and very durable; they are the best baling presses made.

Prices from \$175 to \$350, according to size.

The Hydraulic Press is the most powerful press made.

COTTON SEED OIL MILLS. We make various sizes, of capacity from 5 to 150 tons of seed per day. Our mills embrace all the modern improvements, and will give the best results. We will erect and complete, guaranteeing capacity.

Manufacturers of Smoking and Plug Tobacco Machinery.

THE CARDWELL MACHINE CO., Richmond, Va., U. S. A.

BUCKEYE ALUMINUM CO.,

Manufacturers and Exporters of

Aluminum
Specialties
AND
Household
Utensils.

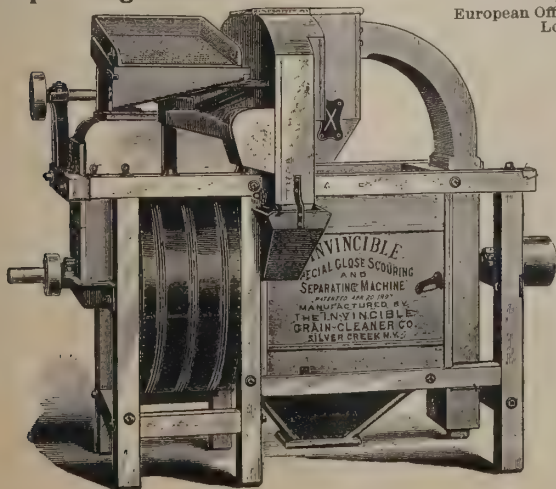


Orders filled through commission houses. Correspondence solicited. Catalogue B on application.

DOYLESTOWN, OHIO, U. S. A.

The **INVINCIBLE** Horizontal Close-Scouring, Polishing and Separating Machines.

Manufactured by the **INVINCIBLE GRAIN CLEANER CO.**
SILVER CREEK, N. Y., U. S. A.
European Offices: 37 & 38 Seething Lane, London, England.



This is a compact, strong, well-balanced and easy-running machine. It scours and cleans grain better than any other cleaner ever built. It is so ventilated that every impurity that is separated from the grain is immediately carried away. This machine, above all others, possesses capacity, efficiency and durability. Every miller who wishes to turn out pure, high-grade flour should equip his mill with one of these machines. It is the best machine of its kind obtainable. Send for full particulars. Special attention given to export orders.

Pierce Well Engineering & Supply Co.

136 Liberty St., NEW YORK, U. S. A.

Cable Address, "Artesianos, New York."

Manufacturers of everything required to drill and complete Wells for

WATER, OIL & GAS.

Any depth from 25 to 5,000 feet.

Also Special Tools for Soundings and Test Borings for Water and Mineral Prospecting and Developing Mines; Light, Portable Outfits operated by Man Power. We furnish Pipes, Casing, Sucker Rods, Tubing, Fishing



Machine for 2,000 to 4,000 ft.

Tools, Bollers, Engines, Etc.

Complete Machines and Experienced Men sent to any Country or Climate. We have the largest and most varied experience of any firm in this business in America.

Catalogues with hundreds of engravings and estimates furnished on application.

When writing, always state fully what is desired, giving greatest depth of borings required, if in Earth or Rock, and if for Water, Oil, Gas or Minerals.

Steam Rigs for 200
350, 600 and 1,000 ft.

Horse-Power Drilling
Machines for Wells
of 200 to 400 feet.



THE

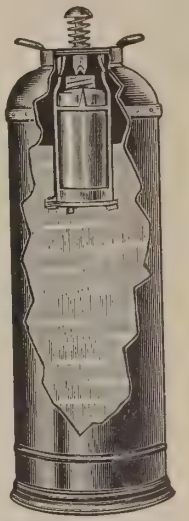
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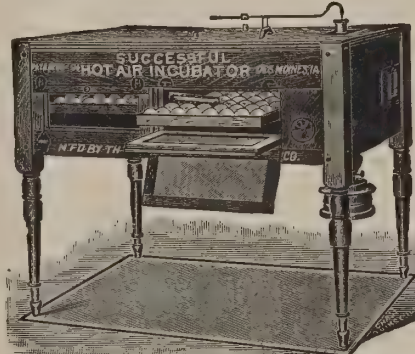
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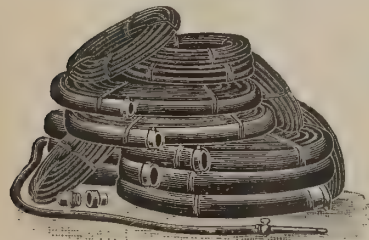
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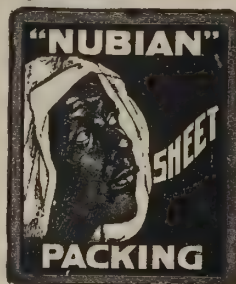
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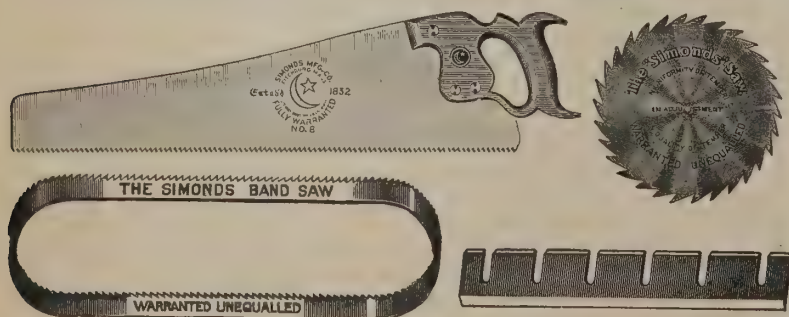
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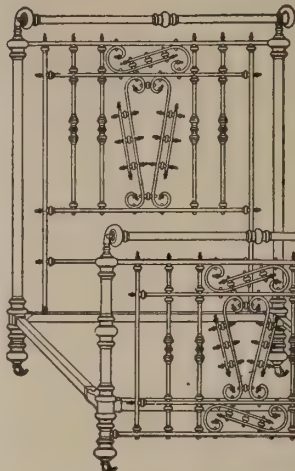
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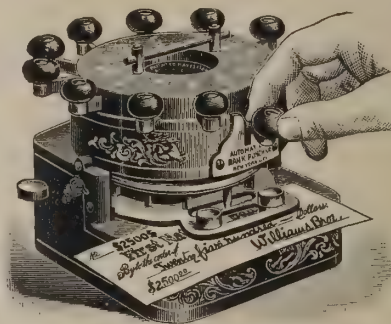
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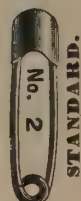
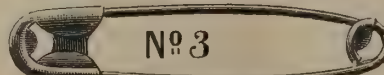
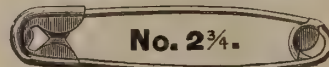
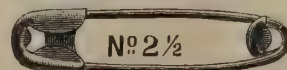
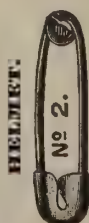
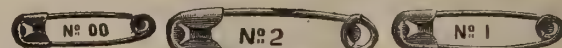
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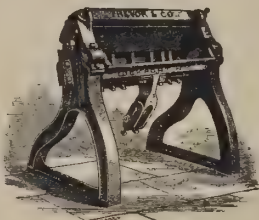
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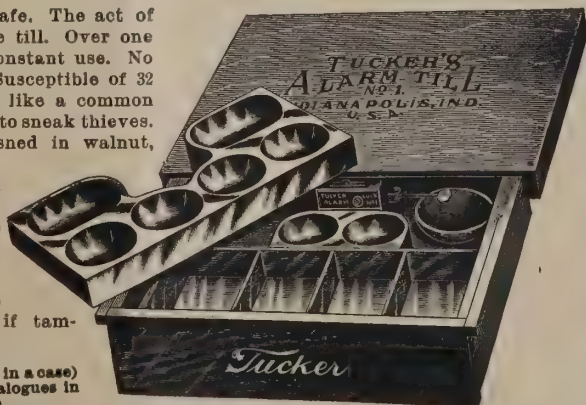
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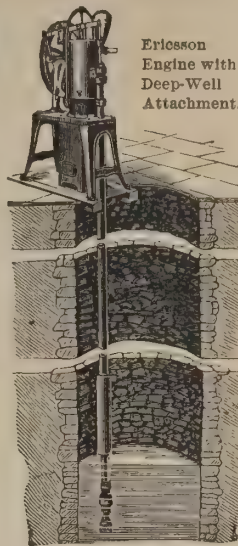
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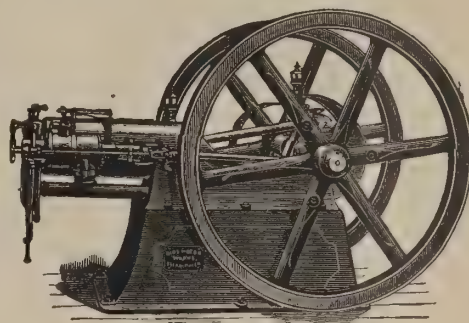


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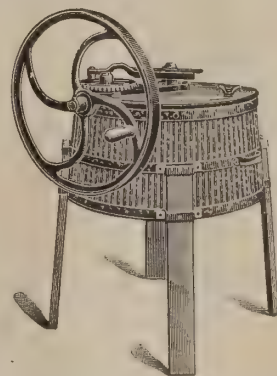
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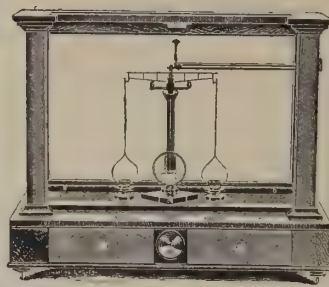
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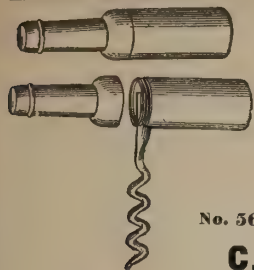
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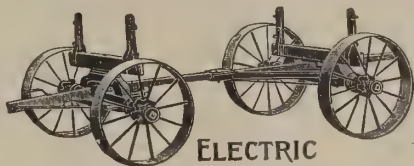
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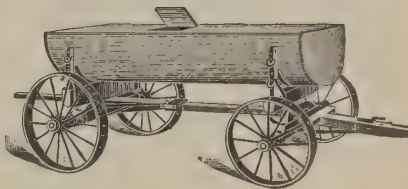
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Child Sets (3 pieces), knife, fork, and spoon, packed each set in lined box, 144 boxes in case, per gross sets..... \$8.00 £1.12.0

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Used by over 265 of the Largest Laundries and Hotels in the United States and Canada.

Annihilator Mangle.

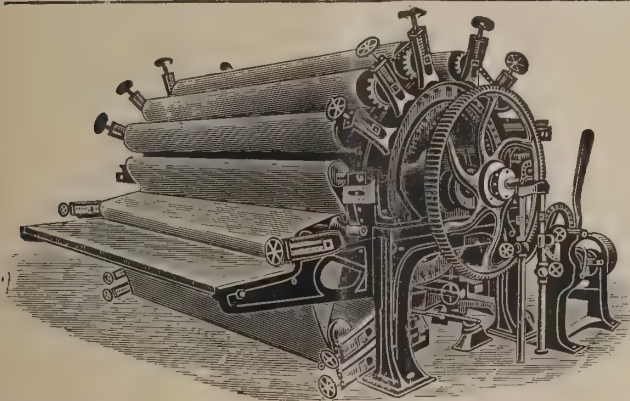
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ORIGINAL RING PACKING.

Patented June 1, 1880.—The Original Ring Packing.

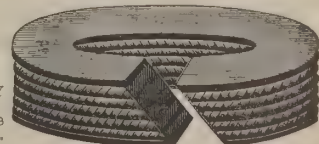
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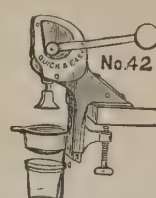




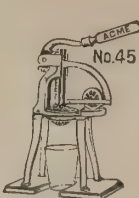
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Quick and Easy
Cork Puller.



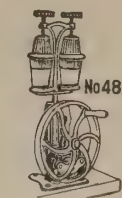
No. 28
Samson
Cork Puller.



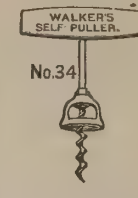
No. 42
Quick and Easy
Lemon Squeezer.



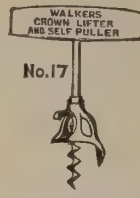
No. 45
Acme
Lemon Squeezer.



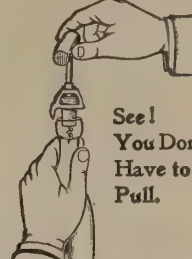
No. 48 1/2
Quick and Easy
Shaker.



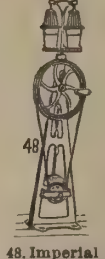
No. 34
WALKER'S
SELF-PULLER.
Cork Screw.



No. 17
WALKER'S
CROWN LIFTER
AND SELF-PULLER
Cork Screw.



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Pull.



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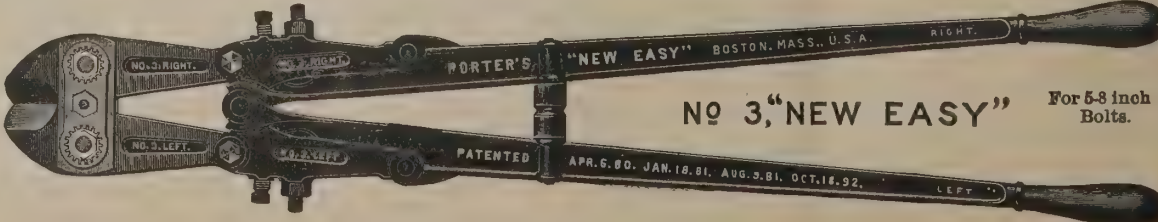

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In which to Read, Rest, Sleep, Write, Study, Sew or Smoke.

Adaptable to Your Different Inclinations of Mind or Body.

The Chair here shown is that known as our B. B. No. 4. It is made in weathered oak finish and is leather covered.

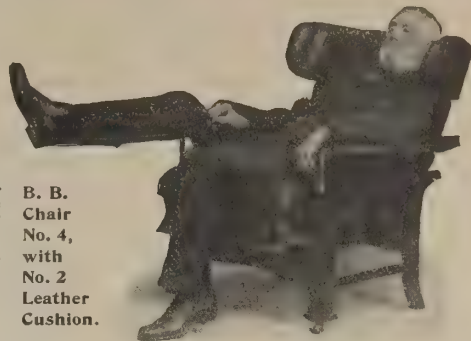
Upon receipt of **twenty-five dollars and fifty cents** in U. S. gold, or its equivalent, we will crate ready for steamer and deliver f. o. b. cars at New York City, **One No. 4 B. B. Adjustable Chair**, made from quartered-sawed oak, finished in either Golden, Weathered or Flemish.

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B. B.
Chair
No. 4,
with
No. 2
Leather
Cushion.



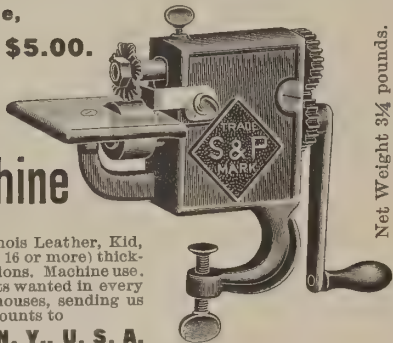
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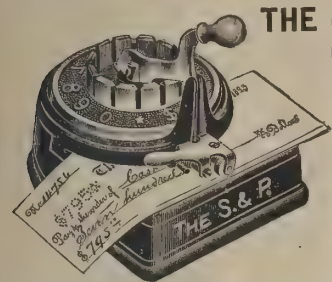
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Will not taint or tarnish. Will fit any Coffee Pot.

The quickest seller of any Household Article upon the market, and should be in every house throughout the civilized globe.



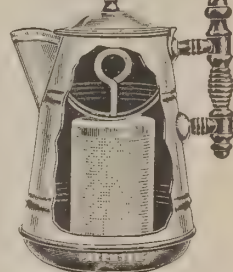
Sanitary Coffee Maker.

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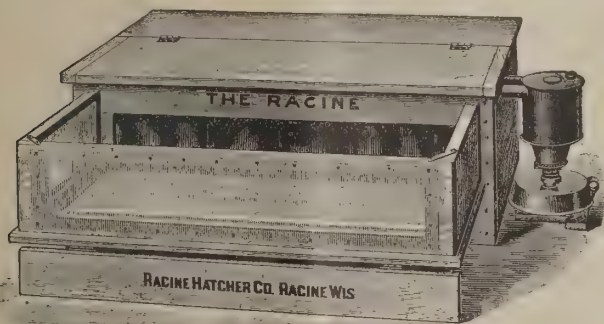
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The prices quoted are f. o. b. cars New York. Our illustrated catalogue, thoroughly describing our Incubators and Brooders, and containing valuable information "How to Make Poultry Pay," mailed postpaid.

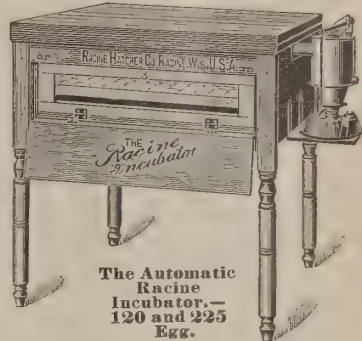
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Racine Indoor Brooder.—100 and 200 "Chick" Capacity.



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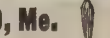
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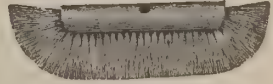


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OF ALL DESCRIPTION.



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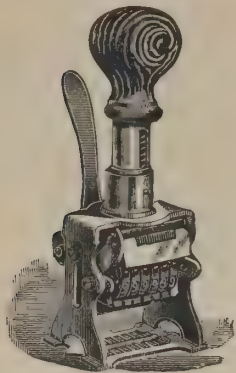
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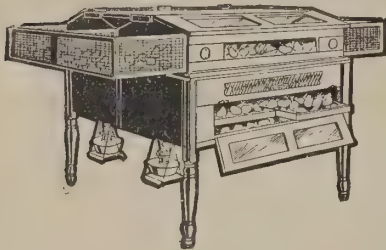
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Manufacturers and Exporters of Harrison's Pain Curer—an Instant Reliever. Also Manufacturers of Infant Syrup—the Nurse's Treasure; Nervina—the Nerve Strengthening; Malaria Specific—cures La Grippe and Malaria; Special Antidote—for Kidney Complaints; Soothing Balm—for Coughs, Croup and Asthma; Magnetic Healer—Skin Beautifier and Healer; Herbal Discovery—Great Blood Purifier, and all kinds of Cooking and Medicinal Extracts for family use. Orders filled through commission houses. Correspondence solicited. Catalogue H on application.



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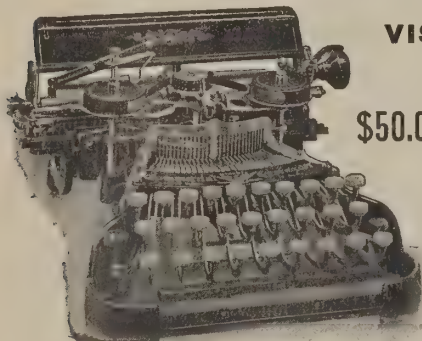


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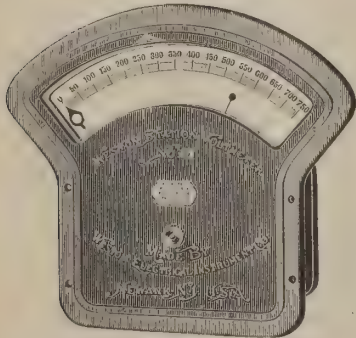


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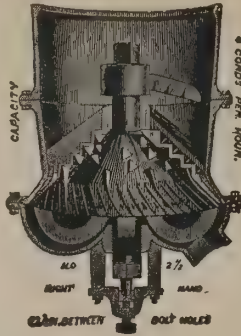


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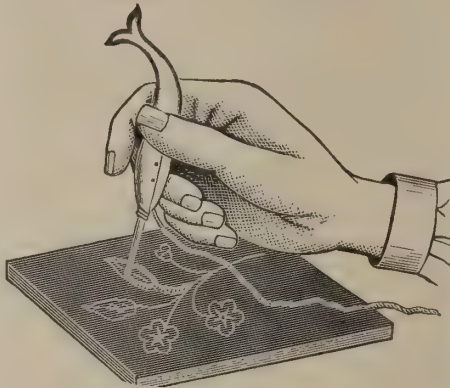


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A PROFITABLE ENTERPRISE.

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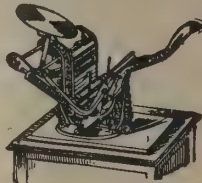
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STEEL DIES AND STENCIL SUPPLIES.

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An entirely new article; not the kind that you have used for the past 20 years, but a gold ink that is equal to dry bronzing. Made only for Plated and Coated Stock. Nothing equal to it. A time and labor saver. Any printer can use it. The most brilliant Gold Ink ever made. Give it a trial and be convinced. Something that all printers have been looking for. Rich gold, pale gold and copper, \$3 per lb.; aluminum, \$4 per lb. Put up in 1-lb. tin cans. Liberal discounts for quantities.

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★ STAR CREAM SEPARATORS. ★

Over 250,000 in use.

More simple in construction, requires less labor and makes from 20 to 30 per cent. more butter than any other separator on the market.

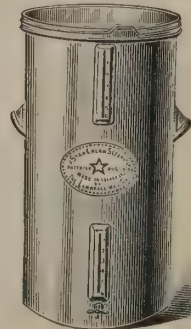
To Introduce abroad.—We will, upon receipt of Twenty-four dollars and fifty cents [\$24.50] in U. S. gold, or its equivalent, box ready for steamer and deliver f. o. b. cars at New York City, one of each of our **Star Cream Separators**, seven in all, as follows:

- No. 0. Capacity [1 cow] 24 quarts.
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- No. 6. Capacity [20 cows] 200 quarts.

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LAWRENCE MFG. CO., Toledo, U. S. A.





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MANUFACTURERS AND EXPORTERS OF

Star Pointer Knee Boot, 20th-Century Toe Weight, Chehalis Hopple, Winkers, Fronts and Housings.

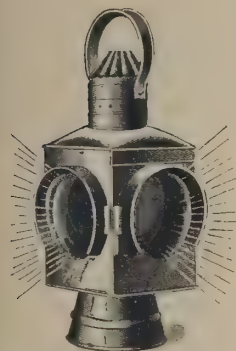
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Contains No Grease. **Pen, Pencil, Stylus and Typewriter** Makes No Cylinder Marks.
Cannot Dry Out. **THE ONLY CLEAN CARBON PAPER.** Marvellous Manifold.

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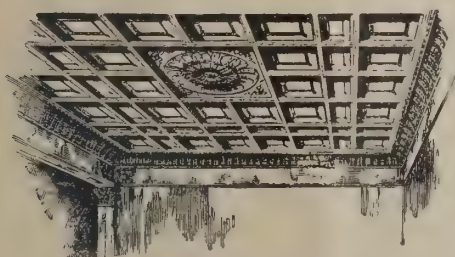
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Ship, Street
and Square

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Locomotive Gauge Lights.

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There Is Only **ONE** ALBANY GREASE

And we are the only Makers.

Have you seen Albany Grease?
How many know its worth?

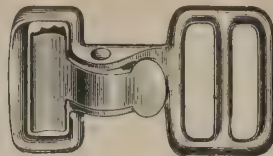
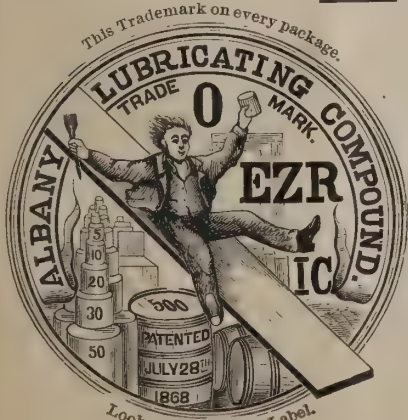
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Cost of using Albany Grease.

Albany Grease is the only safe lubricant for electrical machinery of all kinds and is used by all the large plants and every street railway in the U. S. A. Self-acting. Where oil is used we can save you from $\frac{1}{4}$ to $\frac{1}{2}$ in the cost of lubrication. Oils are advancing and it will pay to use Albany Grease at the present prices. Small 4-oz. sample free on application.

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Cable address: "OEZRIC," New York.



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Lamb's National Strap Fastener and Leather Straps of All Description.

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The Cady Tack Puller and
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Is as good and handy a tack hammer as can be made, and the best and handiest tack puller ever offered, all in one simple tool.

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Diagnostic Instruments, With COLD LAMPS.

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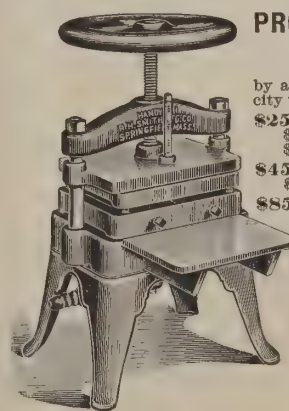
SPECIALTIES.

Hotel Croquette Pans, Deep Fry Pans, Grease Pans (seamless), Domestic Deep Fry Pans, Heavy Wire Frying Baskets, Cherry or Olive Stoners, The "Penn" Wire Fruit Pickers (a perfect device), Ox or Horse Muzzles, French Design Standard Rat and Mouse Traps, New Design Wire Cloth Rat Traps, Lawn Mower Sharpener, Asbestos Household Specialties, Asbestos Stove Mats, Oven Mats, Baking Sheets, Sad-Iron Holders, Asbestos Sad-Iron Mat and Waxing Pad, Metal and Hardware Specialties, Etc.



The Only Dripless Self-Basting Process.

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PROFITABLE BUSINESS in Making Rubber Stamps VULCANIZING OUTFITS

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Safely packed for shipment, F. O. B. New York.

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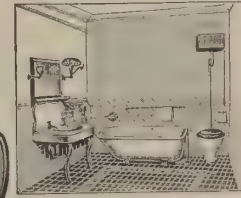
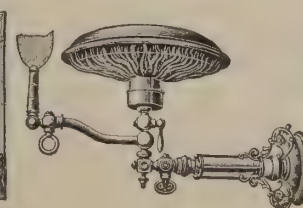
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Correspondence solicited. Ask for Catalogue No. 29 A.

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VAN BIBBER'S "ROUGH AND READY" ("El Tosco y Listo").

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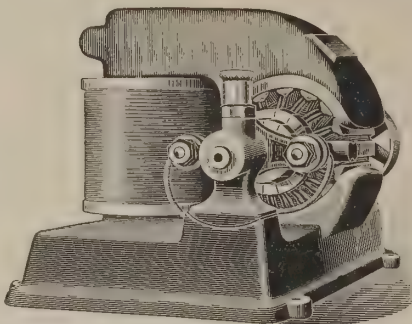
The Type "B" Dynamo or Motor.

Price, \$26.50,
F. O. B. New York.

Output: as a Dynamo, 8 lights or 450 watts; for Electro-plating, 6 volts and 50 amperes; as a Motor it will deliver $\frac{1}{2}$ horsepower.

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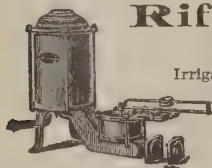
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PUMPS WATER BY WATER POWER.

Irrigation with Rife engines.

Does not require any care or expense.

Water supply for towns, railroad tanks, country houses. All engines guaranteed. Catalogue free. Estimate furnished. Engines never stop. Pump water to 80 feet high for each foot of head. 4,000 engines successfully working.

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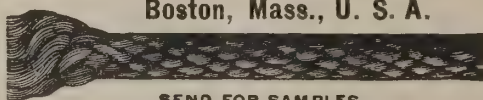
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WINDOW SASH CORD, } COTTON, LINEN OR
RAILROAD BELL CORD, } ITALIAN HEMP.
ARC LIGHT and TROLLEY CORD.

Catalogue "A" on application.

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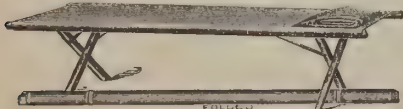


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Largest Makers of Camp Furniture in the World.

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Sample Orders,
Folding Cot No. 29.

Made of the best hard wood throughout, and will support 500 pounds. Furnished with a duck fold for a pillow.

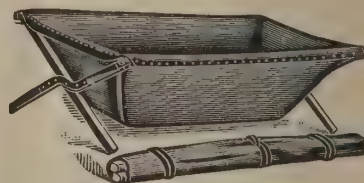
Price Per Dozen, \$12.00.

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Gold Metal Folding Bath Tub,
used in all parts of the world.

The most complete and convenient portable bath tub invented. Folded: 5 feet long, 27 inches wide, 16 inches deep; weighs but 16 lbs. Price Per Dozen, \$66.00.

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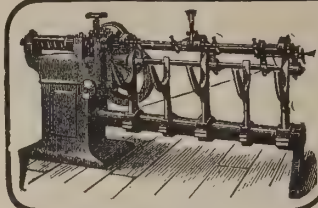
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SHULTZ PATENT SABLE RAWHIDE BELTING.

AGENTS ALL OVER THE WORLD.

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Our Automatic Wire Straightening and Cutting Machine

Straightens and cuts accurately every minute from 60 to 100 feet of wire, any desired length, directly from the coil.

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ST. LOUIS, U. S. A.,

ARE THE BEST.

Write to us for samples and prices.

Agents wanted all over the world.

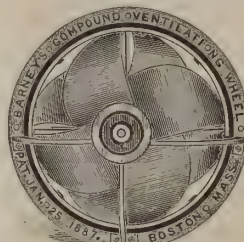
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Manufacturers and Exporters of the

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for the Removal of Smoke, Dust, Heat, Steam, Foul Air or Gases, and for All Sorts of Ventilation.

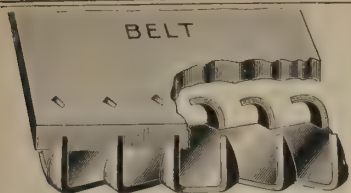
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Correspondence solicited.



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For High-Speed and Hard-Running Belts.
Orders Filled Through Commission Houses.
Correspondence Solicited. Write for Catalogue T.
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Exporter and Manufacturer of 180 Varieties
of Bolt Fastenings, PROVIDENCE, R. I., U. S. A.

O-HI-O STEAM COOKER & OIL STOVE CO.,

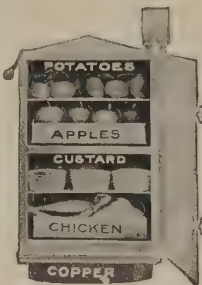
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These are our best sellers, but we make twenty different styles of cookers, boxed ready for steamer. Order direct or through export house; in latter case mail duplicate order to us to avoid errors. We manufacture a full line of Kitchen Specialties and Blue-flame Wickless Oil Stoves; all styles and sizes; prices from \$3.00 to \$22.00; 30 per cent. discount. Prices in U. S. currency or its equivalent. The Cooker saves 50 per cent. in fuel, time, labor and provisions. Saves services of a cook, or makes a good cook out of a poor one. Insures you deliciously cooked, easily digested, never spoiled, steaming hot meals, all cooked over one burner. Handsomely illustrated catalogue free.



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It's made with and without Rubber Tires.

It's made with and without Roller Bearings

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For Jobbers and FOUNTAIN PEN Manufacturers.

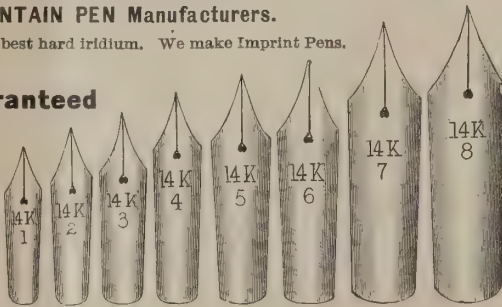
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Smooth Points Guaranteed

Full line Long and Short Nib Gold Pens. Send your name and let me quote you export price.

GEO. P. GAYDOUL,
17 John St., New York,
U. S. A.

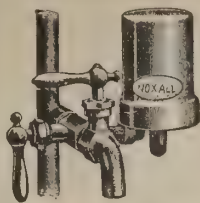
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Western Union Code used.

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Cable address: "Spramotor," London
Codes: Directory, A B C, 4th, Western Union

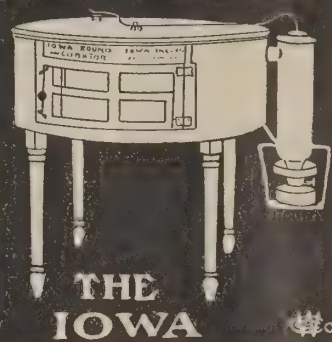
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354 Chicks**

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The incubator that rounds out the largest number of chicks per hatch every time. If you are sure of your eggs you can rest assured of the same number of chicks—strong and healthy—with the Iowa Incubator. Catalogue and prices free on request.

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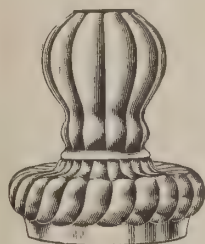
A SCIENTIFIC WONDER

200 HOURS' LIGHT FOR ONE CENT.

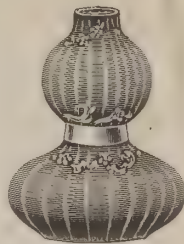
Makes and consumes its own gas, generated from kerosene oil.
The only lamp using a glass burner.

Absolutely Safe and Free from Smoke or Odor.

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Style 1.



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MADE OF ROLLED-GOLD SEAMLESS WIRE.

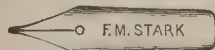


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ALL SHAPES AND STYLES.

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We illustrate herewith a Convenient Arrangement for the Baker's Workshop.

The machine at the left is our **No. 2 Dough Brake**, the next our **1½-barrel Dough Mixer**, and on the extreme right our **7½-H. P. Gas Engine**. The cost of this outfit, including pulleys, shafting and freight f. o. b. New York, boxed, is **\$686.00 (£140)**.

The floor space is 18x6 feet.

Net weight of engine, 2568 pounds; gross weight, 3070 pounds; box dimensions, 46x66x45 inches.

Net weight of dough brake, 667 pounds; gross weight, 967 pounds; box dimensions, 31x48x50 inches.

Net weight of mixer, 1368 pounds; gross weight, 1675 pounds; box dimensions, 76x36x52 inches.

WRITE TO US FOR FULL PARTICULARS AND PRICES ON LARGER SIZES.

THE J. W. RUGER MFG. CO.,
BUFFALO, N. Y., U. S. A.

FRANK MILLER'S HARNESS OIL.

Preserves and softens the leather, thus adding life.

The highest quality of oil on the market.



FRANK MILLER'S Harness Dressing.

Recognized as

"THE STANDARD."

Produces a brilliant jet-black gloss, which will not peel or smut, and to which dirt will not stick.

ESTABLISHED 1838.

The Frank Miller Co.

349 & 351 West 26th Street, New York,

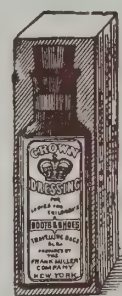
U. S. A.

MANUFACTURERS OF

Blackings and Leather Dressings.

The goods mentioned are but a few of our many preparations for leather. Write to any New York Export Commission House for our Complete Price List and Samples.

Our Preparations Are Uniform in Quality and Always Give Perfect Satisfaction.



FRANK MILLER'S CROWN

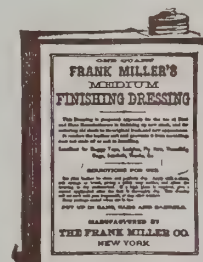
SHOE DRESSING.

For Ladies' and Children's Black Shoes. Produces a perfect finish, without injury to the finest leather. Each bottle in handsome carton.

FRANK MILLER'S MEDIUM Finishing Dressing.

For use of Boot and Shoe Manufacturers in finishing new stock, also for restoring old stock to its original fresh and new appearance.

Softens and Preserves.
Prevents Mould.
Does Not Scale Off.



Hook's "Rapid" Painting Machine

Does the work of fifteen men with brushes, and does it better. Thousands in use.

Hook's No. 10 "Rapid" Painting Machine consists of a special **brass liquid and air pump attached to a heavy ALUMINIZED iron tank**, and equipped with ten feet of hose, extension pipe (for reaching overhead work without the use of scaffolds or ladders) and special painting nozzle.

It will save its cost in painting 5000 sq. ft. of surface.
Will spread any liquid of a sprayable nature.

SPECIAL OFFERS FOR EXPORT ONLY:

Upon receipt of **TEN DOLLARS** we will box and deliver f. o. b. cars at New York City **ONE No. 10 "RAPID" PAINTING MACHINE**, complete; gross weight, 40 lbs.; box, 12½x12½x36 inches; or,

Upon receipt of **SIXTY DOLLARS** we will box and deliver f. o. b. cars at London, England, **SIX OF THE No. 10 "RAPID" PAINTING MACHINES**, complete.

Equally low prices to other foreign ports. Remittances to be in U. S. gold or its equivalent.

We refer to 30,000 satisfied users of our machines.

The "Stay-There" Ready-Mixed Cold Water Paint

is composed of minerals ground in a liquid chemical, to be thinned with water. Packed in tight, iron-hooped barrels. **IT IS AS DURABLE AS OIL PAINT; will not chalk or peel off; is fireproof, waterproof, washable and sanitary.**

Upon receipt of **SIX DOLLARS** we will deliver f. o. b. cars at New York City **ONE HUNDRED GALLONS of WHITE "STAY-THERE" PASTE PAINT**. Gross weight, 400 lbs.; barrel, 28x28x20½ inches.

Our 1904 Catalogue, illustrating and describing the largest line of Painting Machines for every purpose, and the "Stay-There" Paint, will be mailed free to any part of the world. We will open accounts with responsible importers furnishing American references. Orders accepted through New York commission houses.



THE HOOK-HARDIE COMPANY,

37-52 Hook Building,

HUDSON, MICHIGAN, U. S. A.

We Make the Largest Line of SAW MILL MACHINERY in the World.
The Greatest Lumber Maker Is the Circular Mill.

THE BEST CIRCULAR IS THE

LANE'S PATENT LEVER SET.

HIGHEST AWARD—Gold Medal at the South Carolina Interstate and West Indian Exposition.

Adapted to all kinds, sizes and lengths of logs; any size from 3,000 feet up daily capacity; single or double, right or left hand.



We also manufacture Saw-Mill Set Works, Dogging Devices, Etc., Water Wheels, Log Jackers, Canters and Niggers, Drag, Swing and Friction Feed Cutting-Off Saws, Live and Dead Rolls, Edgers, Trimmers, Cutting-Off Tables, Lath Shingle and Clapboard Machines, Planers and Matchers, Transmission Machinery and the Anderson Patent Traveling Cranes.

Circulars and Prices on Application.

Specify "LANE," and when ordering, to avoid errors, please mail us a duplicate of order.



No. 13 MILL.
With Center Guide for Steam Feed.
Can furnish with Heavy Friction Feed for Water Mills, also with Steel Trucks on Steel Axles extending across the Carriage and Steel Rail Track, instead of Chairs and Rolls and Center Guide, if preferred.
Right or Left Hand, Single or Double.

LANE MANUFACTURING CO.,
MONTPELIER, VERMONT, U. S. A.

PHILADELPHIA NOVELTY MFG. CO.

Thirteenth and Noble Streets, Philadelphia, Pa., U. S. A.

NOVELTY INKSTAND No. 3



American Novelties

NOVELTY (SELF-CLOSING) INKSTAND No. 1 (large), retail, - **75 Cents**

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All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of Sydney, Melbourne, Adelaide, Barcelona and Paris, for novelty, workmanship, finish, simplicity, utility and cheapness.

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Novelty Paper Fastener, \$4 doz.; Keystone Paper Fastener, \$6 doz.; Original Paper Fastener, \$12 doz.; Novelty Staples, 15c. per 1,000; Novelty Suspension Rings, 80c. per 1,000; N. Paper Clip, 75c. doz.; P. Paper Clip, 50c. doz.; Novelty Pin Clip, 90c. doz.; The Auto File, \$1.50 doz.; B B C Paper Clip, \$1.50 doz.; Balancing Board Clip, \$2, \$2.25, \$2.50 doz.; Upright Paper Clip, \$1.50 doz.; Accumulator Bill File, \$1.50 doz.; Standard Pen Rack, \$1.75 doz.; Spring Folding Pen Rack, \$2 doz.; Combination Paper Weight and Clip, \$4 doz.; Pocketbook Postage Stamp Holder, \$1 doz.; Automatic Fountain Penholder, \$1.50 doz.; Novelty Inkstand No. 1, \$6 doz.; Novelty Inkstand No. 3, \$3 doz.; Novelty Slate Pencil Sharpener, 40c. doz.; Vest Pocket Glass Cutter, 90c. doz.; Novelty Pocket Knife, \$4 doz.; Novelty Hunting Knife, \$8 doz.; Novelty Pocket Screw Driver, \$4 doz.; Artist's Rotary Kit, \$5 doz.; Self-locking Door Indicator, \$2.50 doz.; Madame Louie Hair Crimper, \$2.50 great gross; Novelty Stitched Hair Crimper, \$1.50 great gross; Automatic Fisher, \$1.50 doz.; Automatic Towel Holder, \$1 doz.; Suspension Gas Wrench, 60c. doz.; Novelty Skein Holder, \$4.80 doz.; Keyring Door Securer, \$1.50 doz.; American Mincing Knife, 1, 2 and 3 blades, 75c., \$1.25 and \$1.75 doz.; The Masticator, \$1.75 doz.; Duplex Can Opener, 30c. doz.; Universal Wardrobe Shelf Bracket, \$1.50 doz.; Double Match Box, Bracket, \$2 doz.; Universal Washer Cutter, \$8 doz.; Novelty Pen Fuller, 40c. doz.

Discounts 20 per cent. from above list. Send your order through any responsible U. S. export commission house. All such houses in New York handle our goods. Catalogue free. New articles constantly appearing. Goods shipped to all parts of the world.

MILLS NOVELTY CO.

INCORPORATED.

CAPITAL, \$500,000.00.

CHICAGO, U. S. A.



Mills Novelty Co.'s Works, Chicago, U. S. A.

Largest Manufacturers and Exporters in the world of all kinds of

Coin-Operating Machines.

The Mills-Chicago.
With Music Box.
Weight, boxed for shipment abroad, about 340 lbs.

Our 80-page catalogue, just issued, profusely illustrated, in colors, describing the many styles of Coin-Operating Machines made by us, will be mailed postpaid to all parts of the world.

Nearly all our Coin-Operating Machines can be made to be operated by the coin of any realm.

All machines are boxed ready for steamer, and prices quoted will be f. o. b. cars New York or San Francisco. Orders received through export houses. When ordering through export houses specify MILLS NOVELTY CO.'S COIN-OPERATING MACHINES, and to avoid errors, please mail us duplicate of order.

The American Exporter

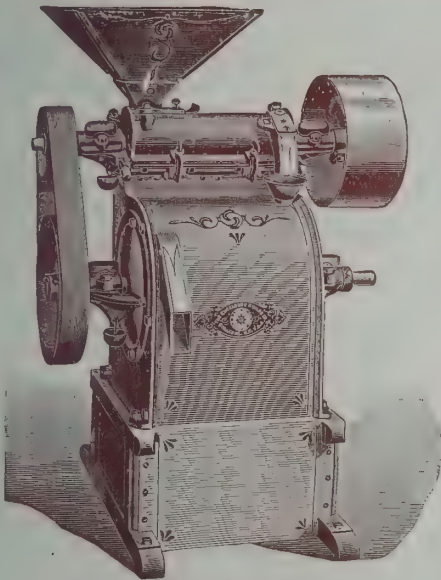
WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIII.

NEW YORK, JANUARY, 1904.

No. 2.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

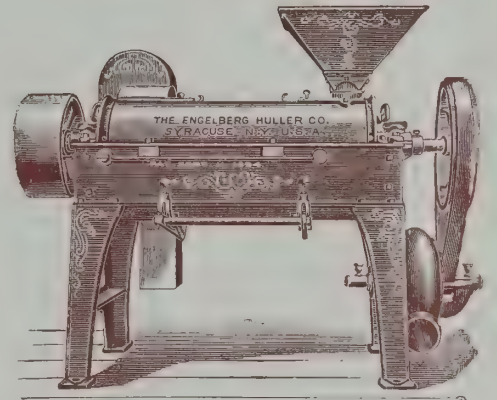


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

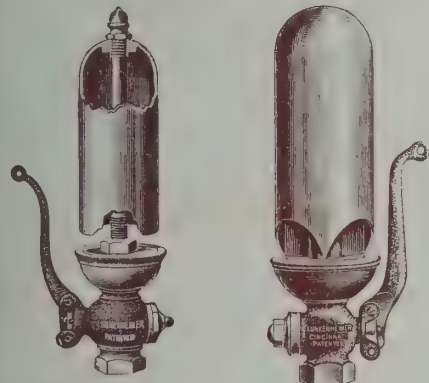
Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the **only** machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.



Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

THE ENGELBERG HULLER COMPANY, P. O. Box B,
Syracuse, N. Y., U. S. A.
Export Office: 339 Produce Exchange, New York City.



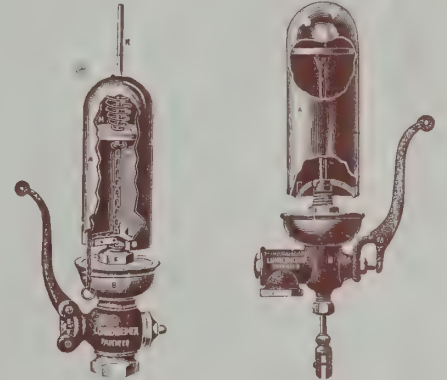
PLAIN WHISTLE.
Made in standard sizes.
1 to 10 inches
diameter of bell.

SINGLE-BELL CHIME WHISTLE.
Made in standard sizes.
1½ to 10 inches.

Lunkenheimer Steam Whistles

Are warranted to blow and satisfy the most exacting. All goods rigidly tested and inspected before shipment. Specify Lunkenheimer make and order from any leading export house.

Write for Catalog of Superior Brass and Iron Valves, Injectors, Steam Traps, Cocks, Water Gauges, Lubricators, Oil Pumps, Oil and Grease Cups, Etc.

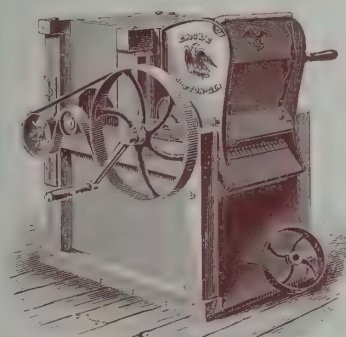


MOCKING-BIRD VARIABLE SOUND WHISTLE.
2½ to 6 inches.

FIRE-ALARM VARIABLE SOUND WHISTLE.
2½ to 8 inches.

THE LUNKENHEIMER CO., Sole Makers, CINCINNATI, O., U. S. A.

BRANCHES: New York, 26 Cortlandt St.; London, 35 Great Dover St., S. E.; Paris, 24 Boulevard Voltaire.

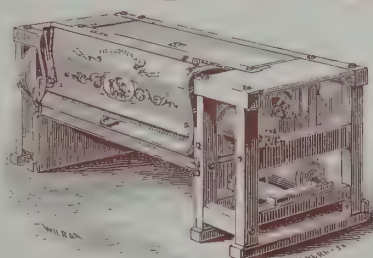


Hand Gin.

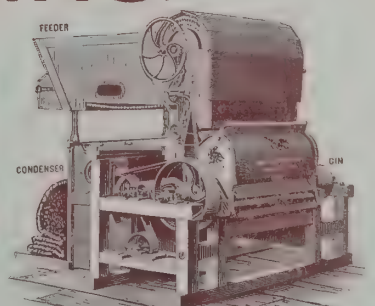
EAGLE COTTON GINS.

These Gins enjoy a **BETTER REPUTATION** THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are **PREFERRED** to all others made, on account of their **STRENGTH, SIMPLICITY, DURABILITY,** the amount and **EXCELLENCE** of the work they accomplish, and the **RAPIDITY** of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

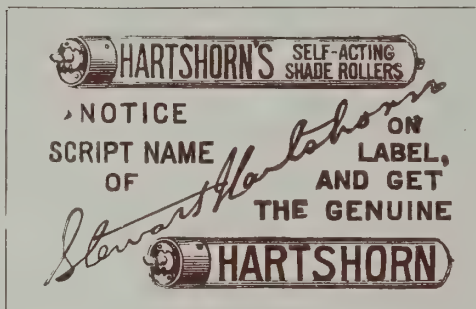
CONTINENTAL GIN CO., Inc., Successors to **EAGLE COTTON GIN CO.,** BRIDGEWATER, MASS., U. S. A.

Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

BEWARE
OF
IMITATIONS



BEWARE
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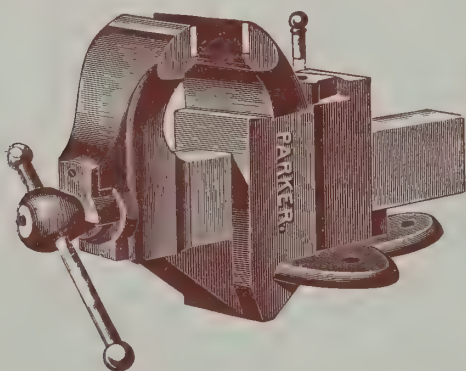
Sold All Over the World. Order through your Commission Men.

STEWART HARTSHORN CO.

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Stockroom: No. 7 Lafayette Place, New York.



THE
Parker Vise

Unequaled for
Strength, Durability
and Finish.

Has stood the test of over
50 YEARS.

EVERY VISE MADE FOR
SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP
USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over 60 YEARS and will stand comparison with any Mill in the market.

We manufacture a line of

Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

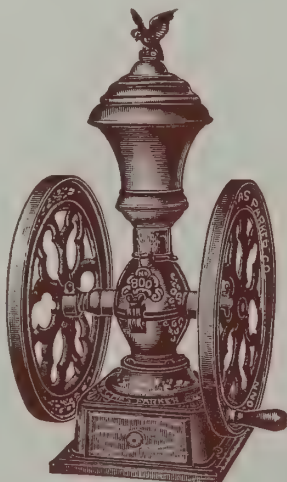
Enquiries concerning our line will have prompt
attention. Catalogues on application.

THE

CHAS. PARKER CO.,

MERIDEN, CONN., U. S. A.

NEW YORK SALESROOM: 96 CHAMBERS STREET



DIETZ
Nos. 30 and 60
TUBULAR
SEARCH
LIGHTS.

These lamps are made for outdoor or indoor use. They give a powerful and brilliant light, and are not affected by the wind.

They are suitable for use in mills workshops, warehouses, stables and summer resorts, or in any other place where a good light is required which will not be affected by strong breezes.

Where it is desired to light up a long row of animals or a long, narrow room of any kind, these lamps are especially desirable.

No. 30 is fitted with our patent bull's-eye lens on perforated plate, adding to the appearance of the light.

No. 30 has a blizzard globe, 1-inch wick and a bright tin reflector 12 inches in diameter. Price, \$30.00 dozen.

No. 60 has a No. 2 globe, 1 1/4-inch wick and a bright tin reflector 16 inches in diameter. Price, \$72.00 dozen.

We are pleased to send complete catalogues (Spanish or English) and price list to those interested.

R. E. DIETZ
COMPANY,

NEW YORK, U. S. A.

Established 1840.



ARCADE MANUFACTURING CO.

(Incorporated 1885.)

Manufacturers of

"Crystal," "Imperial," "Jewel," "X-Ray," "Telephone,"
"Royal Pound," "New Home" and "Favorite"

Coffee Mills.

ALSO

"Champion," "Handy" and
"Phoenix" Cork Pullers

AND

"Perfect" Lemon Squeezers.

BOTH ENTIRELY NEW.
THE HOUSEKEEPERS' DELIGHT.

THE "CRYSTAL"—A One-pound Coffee Mill, Transparent (Glass) Hopper; Transparent (Glass) Receiver. Coffee always in sight. **Sample Dozen**, boxed ready for steamer F. O. B. cars New York, \$6.50. Size of box, 17 1/2 x 21 1/2 x 29 in. Weight: gross, 134 pounds; net, 60 pounds.

Orders received through
export houses.
Please mail duplicate
order to us.
Our illustrated catalog
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THE "CRYSTAL."

"IMPERIAL," No. 705—
A Sunk Hopper, All-iron Top Mill, with Hinged Cover and Top Handle, Hardwood Box and Dovetailed Corners.

Sample Dozen, boxed ready for steamer, F. O. B. cars New York \$4.00
Size of box, 15x16x20 1/4 in.
Weight: gross, 64 pounds; net, 48 pounds.

ARCADE
MANUFACTURING CO.,

Hardware Specialties
Manufacturers,

Freeport, Illinois, U. S. A.



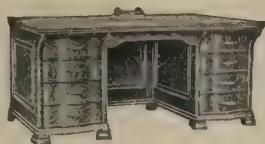
New
Design.

Improved
Pattern.

"IMPERIAL" No. 705.



No. 555—\$20.00.



No. 515—\$100.00.



No. 1—\$36.00.

ESTABLISHED 1880.

GRAND RAPIDS DESK CO.

MANUFACTURERS OF

High-Grade Desks and Sectional Bookcases

FOR THE OFFICE AND HOME.

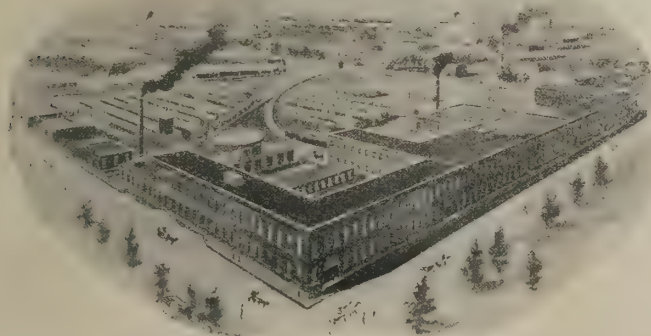


NEW DESIGNS.

SUPERIOR WORKMANSHIP.

SUPERB APPEARANCE.

Our New Line of Sectional Bookcases and Desks, recently placed upon the market, embody the results of over Twenty Years' Practical Experience in Actual Manufacturing.



Works of the GRAND RAPIDS DESK CO., Muskegon, Michigan, U. S. A.

The prices here quoted are for desks boxed ready for steamer, f. o. b. New York. Orders received through export houses. To avoid errors please mail a duplicate of order to us.

Our 100-page Catalogue, illustrating the various styles of Desks and Bookcases made by us, mailed postpaid.

GRAND RAPIDS DESK CO.

Manufacturers,

Muskegon, Michigan, U. S. A.



No. 4—\$80.00.



No. 3—\$70.00.



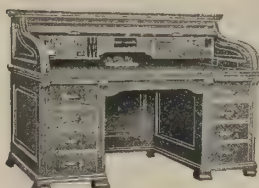
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No. 5—\$70.00.



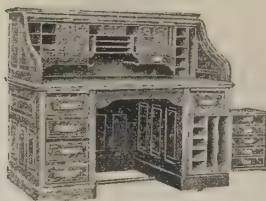
No. 505½—\$130.00.



No. 510—\$230.00.



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The LEONARD Cleanable Refrigerators.

Freely Acknowledged to Be the Best in the World.

Made in GRAND RAPIDS, MICH., U. S. A.

Seven walls to save the ice. Air-tight locks. Sliding, adjustable shelves, and many other improvements. Outside cases, ash with quarter-sawn oak panels, dark golden finish. Walls packed with mineral wool. These prices F. O. B. New York, Boston, Philadelphia or Baltimore, crated for export. The sizes given are: first, width across the front; second, depth from front to back; third, height. All outside measurements in inches.



Single door, zinc lined.

No. 070—Size, 25x17x40.....\$7.19

No. 70—Size, 27x18x42.....\$8.61



Single door, zinc lined.

No. 71—Size, 30x19x45.....\$10.31

No. 71A—Size, 32x20x47.....\$11.65

No. 72—Size, 32x24x48.....\$12.91



Double door, zinc lined.

No. 73—Size, 33x20x46.....\$12.50

No. 74—Size, 35x21x48.....\$14.06



Apartment House, zinc lined.

No. 93—Size, 27x18x49.....\$10.60

No. 94—Size, 29x19x55.....\$12.34

No. 95—Size, 30x20x60.....\$13.96

No. 96—Size, 36x24x68.....\$20.45



Double door, zinc lined.

No. 75—Size, 40x23x50.....\$18.20



Apartment House, zinc lined.

No. 85—Size, 33x21x45.....\$12.16

No. 86—Size, 35x22x53.....\$14.50



Four doors, zinc lined.

No. 89—Size, 38x22x48.....\$17.75

No. 76—Size, 40x25x57.....\$22.25

No. 77—Size, 43x25x62.....\$24.95



Six doors, zinc lined.

No. 58—Size, 45x28x65.....\$32.60

No. 60—Size, 54x31x73.....\$42.60

No. 62—Size, 55x32x79.....\$47.00

No. 66—Size, 64x35x85.....\$58.20

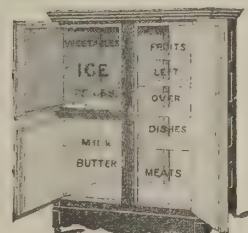


Double doors, lined with real Porcelain on sheet steel.

No. 3—Size, 36x21x47.....\$20.90

Single door, lined with real Porcelain on sheet steel.

No. 2—Size, 31x19x45.....\$16.05



Three doors, lined with real Porcelain on sheet steel.

No. 4—Size, 35x23x46.....\$22.35

Four doors, lined with real Porcelain.

No. 6—Size, 42x23x51.....\$34.35



Four doors, lined with real Porcelain on sheet steel.

No. 57—Size, 47x28x60.....\$40.75



No. 323—Grocer's Refrigerator; wood lined, polished oak cases.

Roll top for butter firkins; storage below. Ice in top at rear.

No. 322—2 rolls; size, 46x41x84.....\$65.00

No. 323—3 rolls; size, 68x41x84.....\$81.00

No. 324—4 rolls; size, 90x41x84.....\$105.00

Orders received through any exporter in New York, Boston, Philadelphia or Baltimore, or through our own Export Office, 54 Warren St., New York. E. L. D. Hester, Mgr.

GRAND RAPIDS REFRIGERATOR CO., Grand Rapids, Mich. U. S. A.

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LEONARD SECTIONAL ELECTROTYPE CABINET,

For Electrotypes, Coins, Minerals, Specimens of Natural History, Proofs, Engravings, Tools, Laces, Jewelry, Dental Supplies, Etc. Made of golden finished oak. Each section has 10 drawers 1½ in. deep and is 36 in. wide, 24 in. deep and 10 in. high. Price, f. o. b. cars New York, each Section, \$6.00; Top, \$1.00 extra; Base with Casters, \$1.50 extra. Weight, boxed ready for steamer, 100 pounds.

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A convenient method for filing and classifying over one thousand Catalogues, Circulars, Etc. A Cross Index System accompanies each Cabinet. Made of golden finished oak, highly polished. Size, 32 inches wide, 24 inches deep and 63 inches high. Mounted on strong ball-bearing casters. Price, f. o. b. cars New York, \$27.75. Weight, boxed ready for steamer, 375 pounds.

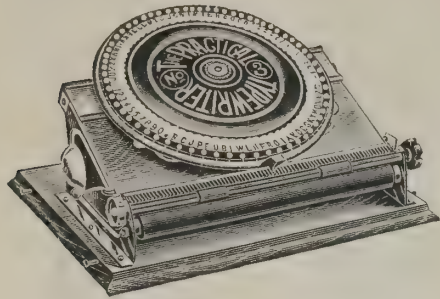


Leonard Sectional Electrotyping Cabinet.



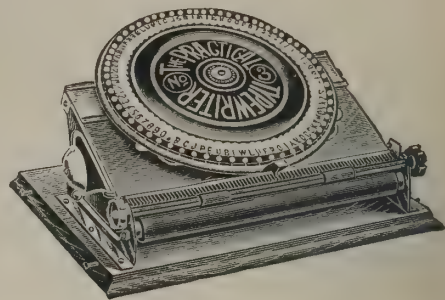
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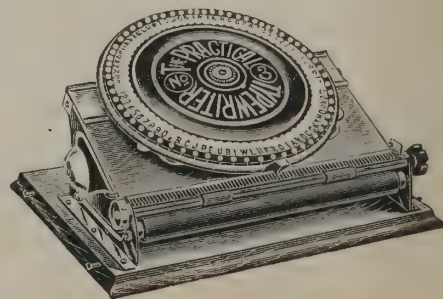
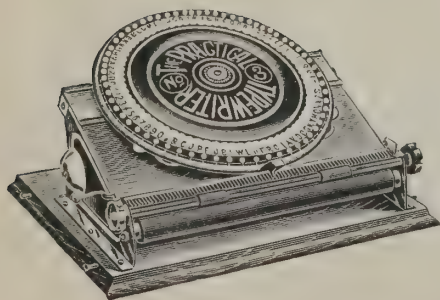
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ESTABLISHED 1846.

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Cable Address: "Estey," Brattleboro, U. S. A.

Builders of High-Grade Organs and Pianos

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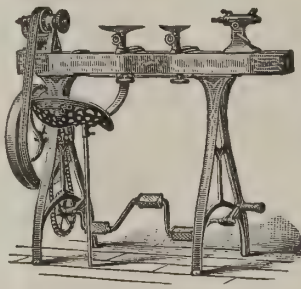
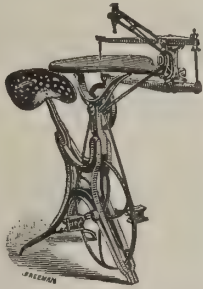
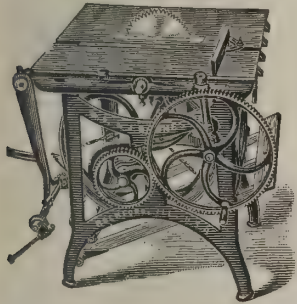
Our Catalogue, illustrating and describing the various styles of Organs and Pianos made by us, mailed postpaid to all parts of the world.

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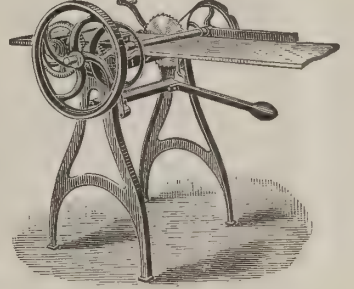
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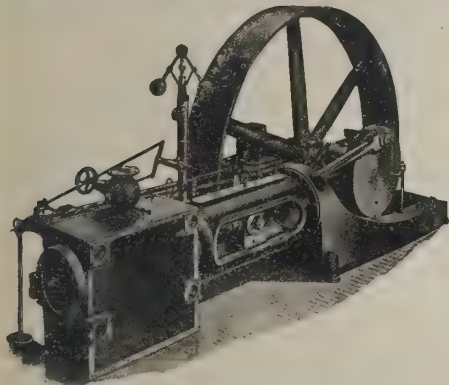
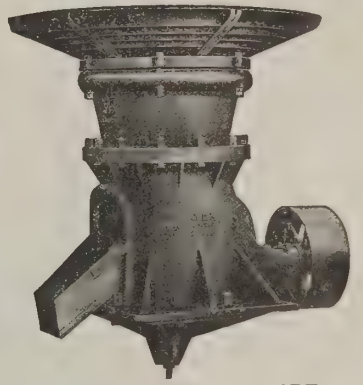
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791 Ruby Street, ROCKFORD, ILLINOIS, U. S. A.**ALLIS-CHALMERS CO., CHICAGO, U.S.A.**LONDON, ENG., OFFICE:
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This electric power is supplied to the many mines, mills and other industries in that vicinity. This plant has been running day and night for four years at practically no expense for repairs.

Send for catalog illustrating many other plants of similar character.

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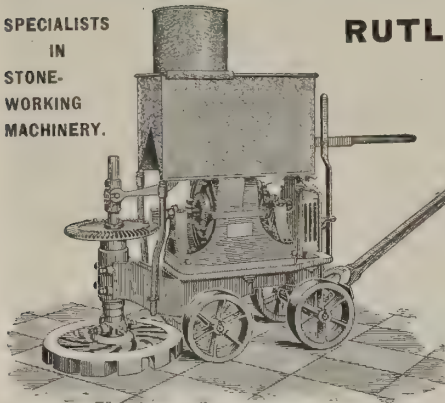
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Patch Electric Floor Surfer and Polisher.

The Patch Electric Floor Surfer and Polisher is a device to dispense with the labor usually employed in dragging heavy weights over tile and mosaic floors to produce an even surface. It is also serviceable for polishing large granite and marble surfaces, and sanding wooden floors. The motor is 2-horsepower, and will be furnished any voltage required. The voltage required should be particularly mentioned when ordering. The surface wheel is 20 inches in diameter. The sand box and water tank are conveniently located, supplying either sand or water as desired. The truck wheels have a heavy rubber tire, thus preventing marring the surface. The machine is shipped ready for immediate use. Gross weight, crated, 900 pounds. Net weight, 800 pounds.

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Bleaching Establishments, Print Mills, Etc.

A complete line of Accessories for Cotton Machinery, Etc.,
always on hand.



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Special Offer
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Only.

The AUTOMATIC WRINGER CO.

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Automatic Clothes Wringers,

will, upon receipt of \$13.00 in U. S. gold, or its equivalent,
deliver f. o. b. cars New York, boxed ready for steamer,

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In THREE Sizes:

20 H. P. - Weight, 9½ Tons
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Hauling Capacity, - 15 to 25 Tons,
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These Engines Always Give
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TORONTO ENGRAVING CO.

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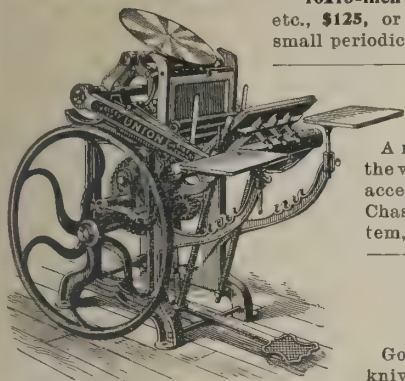


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Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

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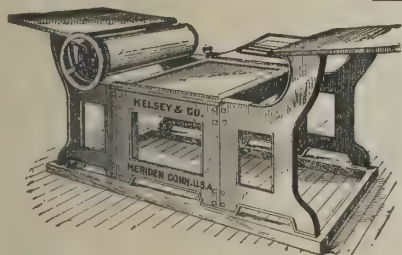


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C. L. HAUTHAWAY & SONS,

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Specialties.



Regular
4-oz. Bottle.

Best dressing put up and warranted in all respects.



Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

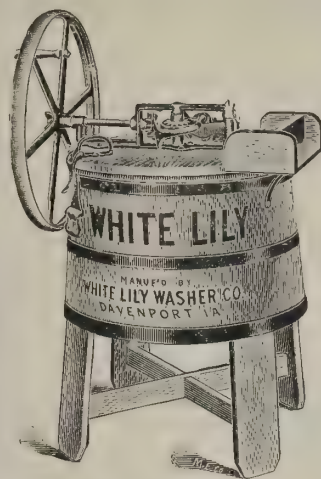
Patent Leather Polish.

For polishing patent leather shoes quickly and without injury to the leather.



"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the



WHITE LILY WASHER.
WASHES LILY WHITE.

White Lily Washer.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is $2\frac{3}{4}$ turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

Special Offer to Introduce Abroad:

Upon receipt of **Thirty-three dollars** (\$33.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**

Weight, 600 lbs. Measurement: 28x24x28 inches.

WHITE LILY WASHER CO.,

MANUFACTURERS,
DAVENPORT, IOWA, U. S. A.

LOVELL MFG. CO.

Erie, Pa., U. S. A.

Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS, RAT and MOUSE TRAPS.



Send for
Catalogue
and
Prices.



We make a full line of
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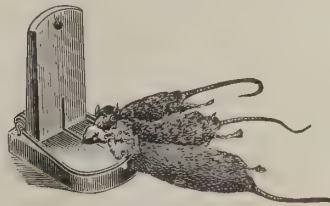


Delusion
Mouse Trap.



Rex Trap.

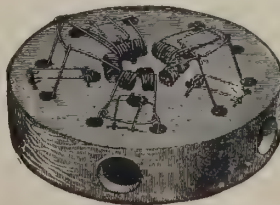
Made in two sizes:
large size for rats;
small size for mice.



Erie Rat Trap.

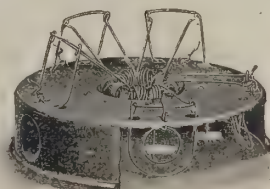
Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch."
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Lovell's Easy-Setting Wood Mouse Trap.

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Wringers
in English only
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Traps in both
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Lovell's Easy-Setting Metallic Mouse Trap.

GEO. L. SQUIER MFG. CO. OF BUFFALO,

MANUFACTURERS AND ENGINEERS.

Coffee, Sugar and Rice Machinery.

Estimates cheerfully furnished on complete Sugar Plantation Outfits.

A COMPLETE LINE OF

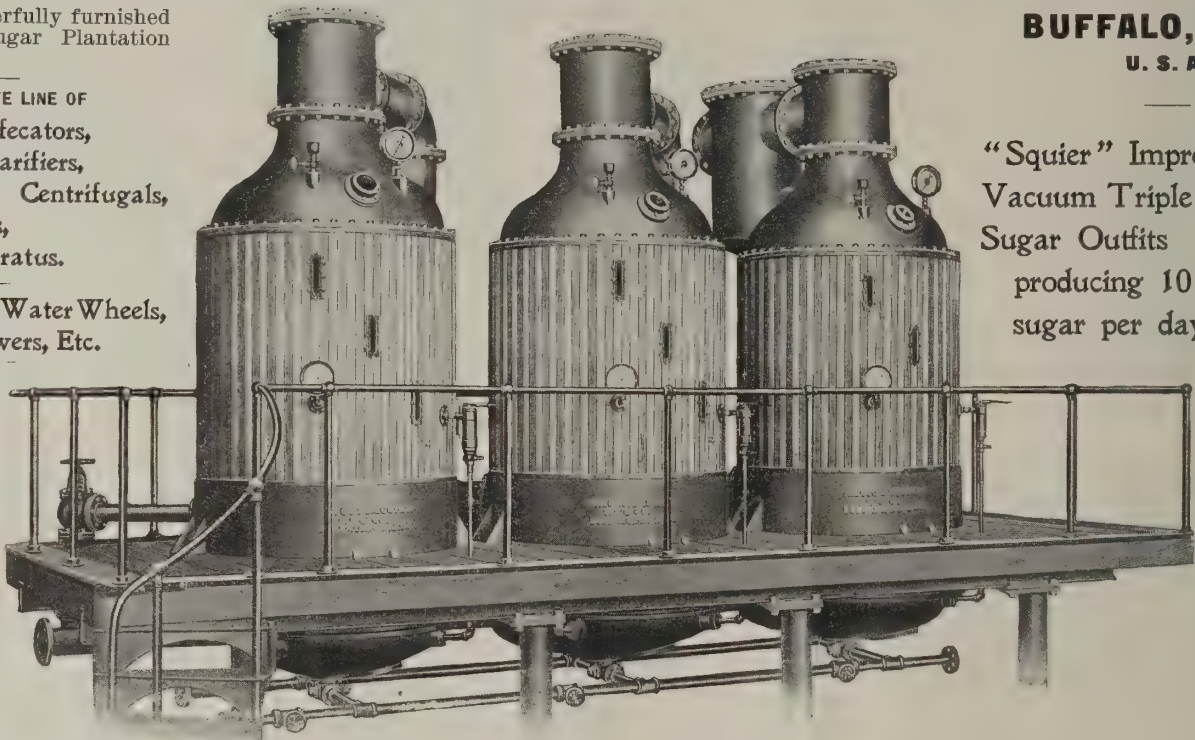
Cane Mills, Defecators, Evaporators, Clarifiers, Vacuum Pans, Centrifugals, Multiple Effects, Distilling Apparatus.

Engines, Boilers, Water Wheels, Horse Powers, Etc.

Coffee
Hullers,
Pulpers,
Dryers,
Etc.

Also Rice
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Write for
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Catalogues.



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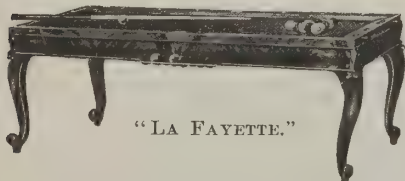
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Vacuum Triple Effect for
Sugar Outfits
producing 10 to 12 tons
sugar per day.

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Largest Makers of Game Boards in the World.

OVER FIVE HUNDRED THOUSAND (500,000) SOLD THROUGHOUT THE CIVILIZED GLOBE.

Library and Dining, Combination
Billiard and Pool Table.



This table is of a graceful French design and is beautiful in every detail. It is a copy of a popular French design of the Second Empire.

It is veneered in beautiful Tabasco mahogany, fitted with genuine rubber cushions, French imported billiard cloth and has a Vermont slate bed. Has all of our Specialties, including our Patent Levelling Device, which guarantees a perfectly level playing surface. Size of playing surface, 32x64 inches.

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Weight, boxed, 650 pounds (294.8 kilos); 28 cubic feet (812 cubic decimeters).

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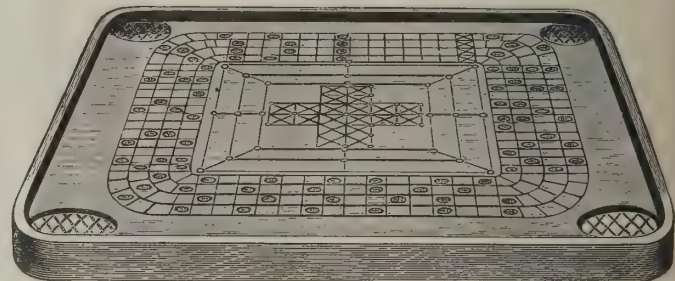
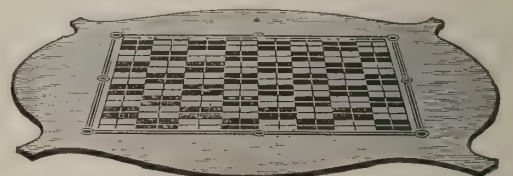
BOOK OF RULES,

published in English, Spanish, German and French languages, accompanies each game board.

Please specify language desired.

When visiting the
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during 1904 see our Exhibit in the
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showing our entire line of GAME
BOARDS and COMBINATION
LIBRARY, DINING,
POOL AND BILLIARD TABLES.

Visitors to the World's Exposition are cordially invited to visit our Works at Ludington, Michigan, U. S. A.



4-Surface Crown Combination Game Board,

showing panel removed, upon which one hundred (100) separate and distinct games can be played.

Price, per dozen,\$32.00.

De Luxe Combination Game Board.....	65 Games, per doz.,	\$36.00
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No. 1 Nonpareil Crokinole Game Board.....	10 " " "	6.75
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Our Illustrated Catalogue, printed in colors, showing the various styles of Game Boards made by us, mailed postpaid. Orders received direct or through export commission houses. When ordering through the latter, to prevent errors, please mail us a duplicate of order.

CARROM-ARCHARENA COMPANY

Ludington, Mich., U. S. A.



[Founded by Root & Tinker, 1877].

WITH WHICH IS INCORPORATED

THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by Howard Lockwood & Co., 1877].

THE JOHN C. COCHRAN COMPANY, - - - Publishers
Bennett Building, New York.

EDWARD W. DREW, - - - Editor.

Published on the 1st of each month.

Subscription, to any part of the world, \$2.00, or an equivalent sum in any other currency. Single copies, 20 cents each. Advertising rates on application.

Entered at the New York Post Office as Second-class Matter.

NEW YEAR IN A NEW ERA.

STATISTICS are dry, figures are tiresome and facts are apt at times to be boresome, so that THE AMERICAN EXPORTER, in wishing its readers a Happy New Year, will abstain from going into extended detail regarding the year just ended and what may be expected in the year to come. In 1903 the exporters of the United States made considerable gains; in some industries the increases were remarkable, and, taken altogether, the year was very satisfactory to merchants engaged in foreign trade. The outlook for 1904 is brighter than it has been on any January 1st since this publication was established—over a quarter of a century ago. There is no hint of a cloud on the horizon, so far as the export trade of the United States is concerned. There are many stars in the skies that may lead our enterprising merchants to new fields, and there is a general tendency toward expansion in trade in the international markets that cannot fail to throw its fair share of commerce to our country.

The relations of the United States with other countries of importance are more cordial than they have ever been before. The relations of our exporters with their correspondents abroad are closer and heartier than we can recall on a previous New Year day. The demand for American manufactured products is greater, the facilities for supplying the demand are larger, and, taken altogether, the outlook is brighter, better and more satisfactory from every point of view than it has ever been before. America has the goods that are in demand. American's manufacturers and exporters can furnish them.

Our foreign readers probably care more about what America has to sell than about how Americans fare at home, but for those who take more than a trade interest in our country it is worth while saying something more. The internal commerce of the United States is keeping pace with the conditions to which we have just referred, and the prosperity of the country is greater than ever. Cabled reports sent to the European and possibly to the Australian countries have been misleading. Bad news everywhere travels faster than good news. The daily newspapers give much space to a murder and print it on the front page, while some great public benefaction or an important commercial event is made subsidiary to the criminal happening and found on an inside page. If mills close temporarily the news is heralded, but when operation is resumed the fact is usually overlooked, or tucked away in a corner where it cannot be seen. In the last three months of the year just ended many mills have suspended operations for a brief period in the United States, some have reduced wages before resuming, but others have gone on and have voluntarily paid their operatives higher wages. In the steel industry there has been an adjustment of the differences between the supply and demand. THE AMERICAN EXPORTER last February showed how inconsistent some editors were in estimating the steel trade situation. Since then the great balance wheel of supply and

demand has been working regularly, and the mills that then had too much to do are now working on a normal output of products, while other mills that were not bearing their fair share of the burden are now having more work than they were then doing.

During the year just closed there have been no important labor troubles affecting the foreign trade of the United States. The city of New York was tied up, so far as building operations were concerned, for nearly half the year by strikes of iron workers, but outside of that industry the effect was of little consequence. In general trade internally the country was more prosperous than ever, proving conclusively that even the idleness of 50,000 or 100,000 workers in a great city cannot check the onward movement in the new era of prosperity of the country. However all this may be, it is a fact, nevertheless, that the manufacturers of the United States were never better equipped to supply goods to their foreign customers than they are in this new year of 1904, and we believe that our readers not only realize the fact, but that they will act intelligently, as they invariably do, in pursuing their business course in the new year. To each and all of them THE AMERICAN EXPORTER wishes a happy and prosperous New Year.

1903 A RECORD-BREAKING YEAR.

THE foreign commerce of the year just ended was the largest in the history of the United States, the aggregate amounting to nearly \$2,450,000,000, as against \$1,714,066,116 in 1893, \$1,547,020,316 in 1883 and \$1,164,616,132 in 1873. The Government reports also show that our commerce with the non-contiguous territory of the country was much larger than ever before, not taking into account the gold ore of domestic production which was received from Alaska during the year. The manufacture of money in the way of coinage at the Government mints was larger than ever before and in many lines of industry enough information is available at this time of writing to show that the country generally enjoyed a more prosperous era than it had previously experienced, while the bad reports were fewer and of less importance.

A greater number of foreigners came to our shores than has ever been recorded in the history of the country and we believe that a larger proportion than usual will become useful citizens and aid in the development of our great resources. This condition would indicate that the possibilities of life in America are becoming better understood in other countries, just as the merchants abroad are acquiring a better knowledge of the excellence of the manufactured articles which enter into our export trade. From many new sources during the year came information of the growing realization in other countries that American manufacturers make their goods for practical use as well as for sale, and that their wares cannot be excelled for durability or reasonableness in price. This is particularly true of our agricultural and farm implements, but it is by no means confined to any particular line. The year was a record-breaker in trade, both in the domestic and export markets, and our merchants and manufacturers are to be congratulated.

PRAISE from Sir Hubert is praise indeed, according to an old saw. Purchasers of American goods everywhere in the world will be interested in the extracts which we print on another page in this issue from the recent report of Henry Birchenough, the special commissioner of the British Board of Trade who has been studying trade conditions in South Africa. Mr. Birchenough is marvelously frank in his commendation of American goods and commercial methods and there is a sincerity in his expressions of opinion and in the strength of his conclusions that makes his report not only interesting but of great importance.

NEGOTIATIONS between Japan and Russia, at last accounts, were dragging along with a degree of slowness that seemed to tend toward a peaceful settlement of the dispute between the two countries. It seemed evident that Russia was disposed to place upon Japan the responsibility for a war, if all efforts fail to preserve peace. It is sincerely hoped by Americans that there will be no outbreak of hostilities.

BIRTH OF THE NEW REPUBLIC.

FROM a number of view-points the erection of the new Republic of Panama was one of the most important events in international political and commercial affairs that occurred during the year which has just ended, despite the fact that there were many other events that tended toward permanent peace and the consequent greater development of the commerce of the world. In our last issue we chronicled the recognition of the new government by the Government of the United States, and pointed out the effects that the political changes on the Isthmus of Panama would have upon the welfare of the world, but the birth of a new republic is not to be dismissed in a summary manner. American interest in the territory has been keen on account of the difficulties which Colombia threw in the way of the construction of the Panama Canal. The price offered by the United States to Colombia was concededly extravagant, but the American Government went almost beyond the extreme in its efforts to make the Isthmian Government and people feel that we were disposed to treat them more than fairly. Under the contract with the selling company, as was pointed out in *THE AMERICAN EXPORTER* last September, the question was raised, and never seriously disputed or controverted, that the United States having purchased all of the rights and concessions of the Panama Canal Company it was only a matter of courtesy that Colombia should be consulted at all, much less be paid \$10,000,000 for what some people were inclined to believe was really nothing beyond goodwill. However that may be, Colombia dallied for months with the offer, finally rejected it, and after the revolution, when it was too late, offered to let us have the privileges for nothing. It is really a situation with which an Aesop ought to deal.

The birth of the new republic, aside from its commercial interest, brought forth evidences of friendship from the foreign Powers that were particularly gratifying to the people of the United States. Germany, for instance, promptly recognized the new Republic of Panama as a sovereign and independent State. Baron von Dem Bussche-Haddenhausen, first secretary of embassy and chargé d'affaires, addressed a note to M. Bunau-Varilla, the minister from Panama, informing him that, the German Government having received his notification of the creation of the new republic and his formal assurances that Panama assumed and would execute all obligations contained in the treaties between Germany and Colombia so far as they affected territory over which Panama is now sovereign, his majesty, the Emperor and King, extended full recognition to the new republic and best wishes for its prosperity and long life. The course of the European Powers was undoubtedly due to the action of the United States Government in giving the baby republic a helpful guarantee that its existence would not be crushed by rivals. From no source did any objection come, except from the repudiated parent, Colombia. It is not necessary, however, to say much more. The world generally hailed Panama's birth as an event of political and commercial importance. It means that the great inter-oceanic canal will now be pushed to completion without unnecessary delay, and that the whole world will benefit more or less by one of the revolutions which frequently happen in the Central American countries.

STATISTICS DO NOT SCARE.

FIGURES are all very well in their way, but statistics do sometimes assume the guise of a nightmare. The latest attempt of the statisticians to scare people is to make estimates of how soon the supply of iron will cease. They argue that the world is using such enormous quantities, 30,000,000 tons annually being taken out of the ground in this country alone, that it will be not so many years before the end of the supply is reached. The fear regarding the future when there shall be no more iron to extract from the earth is a foolish fantasy, and does not concern practical, everyday business life. It is to be put in the same category with the dire happenings that will follow when the coal supply gives out, when fuel oil ceases to flow, when the forests have all been razed and the atmosphere is destroyed by some natural phenomena. Anybody who wants to do so can find plenty of trouble to borrow, but it is refresh-

ing to observe that the average wide-awake American has neither time nor inclination to weep over the woes that may be the fate of the people of the future. They live intensely in the present, and although they are not entirely unmindful of the future, they refuse to be scared by prognostications of what may happen to unknown mortals in distant futurity.

The treasures of Mother Earth are an unknown quantity, and discoveries succeed one another with such marvelous rapidity that there is no chance for guessing regarding the next of Nature's wonders that may be brought to light. There is no real reason for alarm over the fatal scarcity of anything that may be necessary to human happiness or mortal existence. A recent writer wisely says: "We do not scare very readily over the prospect of the failure of the world's resources in any direction. When it gets so that human beings cannot exist on earth they will probably cease to move on the planet, but it seems as if the generation living had much more occasion to be concerned about its own comfort, and wisdom, and virtue than about the prospects of health and happiness of those who may dwell in some distant period."

A REMARKABLE DISCOVERY.

AN other page we print an account of tests made by an American inventor who believes that he has discovered a process by which electricity can be produced direct from fuel, without the intervention of a costly dynamo. The tests were made in the presence of a number of newspaper men and scientific writers, and the experimental machine seemed to do all that was claimed for it. An unusual feature of the test was that the inventor had no secret to hide and not only explained the operation in detail, but took apart his machine, and, as he said, could only prevent others from enjoying the fruits of his discovery by the letters patent which had been granted. Electricians who were present seemed to be satisfied with the exhibition and commented favorably upon the frankness of the inventor, as contrasted with the secrecy usually thrown around new discoveries by the persons interested.

It remains, of course, to be ascertained whether the process can be made commercially profitable, and this will soon be determined by the construction of a large apparatus which will effectually demonstrate the success or failure of the discovery from a practical, commercial point of view. If it proves a success, it promises to revolutionize the electrical industry, for on a small scale it has been found to produce electricity much more cheaply than it can be done with the dynamos now used for the purpose. The cost of installation will be less, and if successful the new apparatus will eventually supplant the costly machinery now employed to produce the electric fluid. The possibilities are certainly great and the subsequent developments will be watched with interest. As is our custom, we will inform our readers regarding the fate of the process.

ONE of the features of 1903 was that what is called the crop-moving period was passed with less than the usual disturbance to the money market. This is a period that ordinarily gives American bankers much concern, for difficulty is usually encountered in supplying the necessary currency to move the crops. In 1903 the balance was so well-adjusted that there was practically no disturbance of money rates, and the supply of currency was entirely adequate. Our readers abroad who are not familiar with this crop-moving feature of American domestic economy will find it difficult to realize the importance of this incident in our prosperity, but they will better appreciate it when they are informed that in some previous years, before the present irresistible tide of prosperity began its flow, there were occasions when the crop-moving crisis came dangerously near to amounting to a money panic. This condition has been gradually changing for the better and it is a matter for national gratification.

THE new Panama Republic unquestionably made up for the time lost by Colombia in acting in the Isthmian Canal treaty matter. Panama hardly waited a minute.

WONDERFUL UNITED STATES DEPARTMENT.

THE report of the United States Secretary of Agriculture, presented to Congress last month, is a wonderful document in its scope, comprehensiveness and general interest. Persons who have not come in contact with the work of this branch of the Government can scarcely realize the diversity of the duties performed by its elaborate machinery. Pages of this publication could be filled with a mere enumeration of the practical efforts which are being made to give American producers the best scientific advice possible in growing their crops, marketing their output, dealing with insects and providing for the innumerable contingencies that the farmer is likely to encounter. Forest preservation, new methods of making turpentine, new markets for products, pure-food-law enforcement, the weather probabilities, agricultural export trade, physics and chemistry of the soil, the breeding of animals and a thousand and one other subjects are considered intelligently and exhaustively. New inquiries and investigations in every direction are being constantly started, and large farms and experiment stations are maintained. Agriculturists can learn from the department the best methods of farm management from every point of view; culturists of specialties in fruit, vegetables and grains can ascertain anything that may be needful for them to know in their efforts to succeed. New seeds and plants are brought from abroad and efforts are made to propagate them in this country. Our agents extend their search to Asia and Africa, as well as elsewhere, and the efforts of all are based on coming to substantial commercial results.

Mr. Secretary Wilson's report devotes considerable space to the discussion of silk-culture experiments, to which reference was made in *THE AMERICAN EXPORTER* several months ago, which are of renewed interest in view of the fact that a plant was recently erected near Sydowsaue, Germany, for the artificial manufacture of silk by a secret process. The German experiment is reported to be a partial success, the silk being soft in texture and creamy in color, although it has only one-third of the strength of real silk. The American attempt to increase the silk output is being conducted on different lines. An appropriation of \$10,000 was obtained, expert workers from France were secured and they are now operating the reels in the Department of Agriculture, which purchases from the raisers of the cocoons the product at current European market rates. The result of this experiment so far is reported to be satisfactory, and the officials believe that the silk industry will be successfully established in the United States, although its accomplishment must necessarily be slow. This is only one of the many fields of research in which the United States Government seeks to aid the inhabitants of the country in taking full advantage of the natural resources of the various portions of the Union. The department is unquestionably doing marvelous work in a multitude of directions.

BANKING conditions form a fair test of a country's prosperity. Since March 14, 1900, no fewer than 1,765 new banks, with a total capital of \$104,493,000 have been organized in the United States. During the year just ended, 533 of these banks were brought into existence, a really remarkable increase.

SOME idea of the extent of ownership of the stock of America's largest "trust," the United States Steel Corporation, may be gathered from the statement that the owners now number very nearly 100,000 persons. The whole number of outside shareholders of record at present is 74,086. There are 24,540 employees of the company who either own stock or have partly paid for shares which they have purchased, making the grand total of 98,626 individuals. This is certainly a remarkable showing for a concern which is alluded to as a "monopoly" or "trust."

UNITED STATES SECRETARY OF AGRICULTURE WILSON devotes some space in his December report to Congress to the increased exportation of American fruits to Europe. He records as a "notable event of the year" the inauguration of direct shipment of American winter apples to Paris from his Department.

GERMAN EMPIRE'S FUTURE.

AMERICANS generally have come within the last few years to hold Kaiser Wilhelm II in a much higher degree of regard than was formerly the case. It is not necessary to go into the reasons at this time, for an enumeration of them would require much space and many of them are freshly within the recollections of our readers. Cabled reports from Europe during the last two months to the effect that disease was likely to shorten the Emperor's reign were, therefore, received in the United States with real concern, especially among statesmen who take an interest in foreign affairs, and among our merchants who are engaged in international trade. Aside from his friendly attitude toward America and Americans, the Kaiser has displayed a world-wide broadness in his policy that has had a beneficial effect upon commerce everywhere, and his retirement from public life would be a serious loss to modern civilization, a fact that we believe is generally realized.

It is consequently gratifying to learn from such a trustworthy and well-informed source as the German Ambassador to the United States that the cabled reports were misleading and with little foundation in fact. On his return from a visit to the Kaiser in December, the Ambassador, Baron Speck von Sternburg, promptly set the rumors at rest. Speaking of the health of the Emperor he declared in terms of positiveness, which we quote for the benefit of our readers who have seen the disquieting reports, as follows:

"He was in excellent health when I left him, and in good spirits, too. He, however, speaks in a low tone, so as not to complicate his throat trouble. Those who are in a position to know all about him, feel no concern whatever over his condition."

The news Baron Speck von Sternburg brings is reassuring to those who have at heart the welfare of the world, both politically and commercially. In the latter connection it is worthy of mention that the United States heads the list of countries which furnish the merchandise imported by Germany, with a grand total for 1902 of \$216,841,800, or 15.7 per cent. of the total importations made by Germany in that year. In the same period the United States was third among nations purchasing from Germany and took 9.3 per cent. of the total exportations of that country. While the trade balance is in favor of the United States, it is interesting to note how prominently this country figures in Germany's foreign commerce.

THE award of the annual Nobel Peace Prize, \$40,000, by the Norwegian Parliament, to William R. Cremer, M. P., publisher of *The Arbitrator*, of London, for his work in behalf of international arbitration, was noted with much interest in the United States, for Mr. Cremer has visited this country three times in the pursuit of his mission and has presented memorials to the President and the Congress from members of the British House of Commons in favor of a treaty of arbitration between Great Britain and the United States. Mr. Cremer founded the International Parliamentary Conferences, which have met since 1888 at Paris, London, Rome, Berne, The Hague, Budapest, Brussels and Christiania, and he has been for nearly thirty years the secretary of the International Arbitration League, so that he may be said to richly deserve the high recognition which he now receives for his efforts in behalf of the movement for one of the highest accomplishments of civilization—universal peace.

AMERICAN coal miners have so far paid no attention to the discussion of a universal strike of all of the coal miners of the world, which was discussed at the Brussels convention of the International Coal Miners' Association. Such a strike would be a vast project, and its effect on commerce would be serious. It is not believed here that the European miners will undertake to carry out such a gigantic affair, and it is more than certain that the American miners will have nothing to do with it in any shape.

PRESIDENT ROOSEVELT, in his message submitted to the Congress of the United States last month, congratulated the country upon the steady progress made in increasing the efficiency of the American navy. There will be no departure from the present policy of the Government in this direction.

MACHINERY VERSUS MEN.

ONE of the great railroads, which has its terminals on the shores of New York's harbor, is about to make a departure in the use of labor-saving machinery that will affect 4,500 men. These men are now employed in handling coal, but the machinery that is to be installed will do the work of most of them more quickly and quite as well, at a great saving of time and expense. By using the new machinery a carload of coal can be turned nearly bottom upward and dumped into a coal barge or schooner. The operation of one machine will require the services of only four men, and will take only a few minutes, whereas to do the same work now it takes twenty men about four hours.

The new boat-loading machine consists of an iron framework thirty feet high. Inside of this is a powerful elevator, capable of lifting an iron car containing fifty tons of coal. When the car reaches the top, iron clutches are attached to the sides automatically, and then by other mechanism the car, platform and all, is turned almost bottom upward and the coal dumped into a chute leading into the boat. This chute is operated by machinery, and has swing enough to distribute the coal evenly into all parts of the boat, thus saving the expense of the "trimmers," now employed to level the coal.

It is estimated that the cost of unloading will be about one-third of what it is at present. Writers in the newspapers, who have commented upon the coming change, have enlarged upon the fact that 4,500 men will lose their employment. Not one writer has sought to show that in the march of American progress these 4,500 men will be otherwise provided for, nor has a solitary writer said a word about this innovation as being only one of many steps in eliminating man from competition with machinery, where the latter can do the work as satisfactorily as it can be done by the former. We have given more description of the machinery used than would be necessary in such a brief item of the change as would interest our readers under ordinary circumstances, but the development seems to be of more than common interest when taken in connection with the advance made in America within the last few years in labor-saving devices. In the iron and steel industry, for instance, it is not so many years ago that giant cranes, handling tons of molten metal when necessary, replaced the hundreds of workmen who struggled with small pots of the hot fluid. In other industries also machinery has been found to do the work of men to greater advantage. It would be a long recital to enumerate a tithe of the cases where even the workers now realize that labor-saving machinery was a Godsend to them in disguise—saying nothing about the benefits that the employers have derived from the change.

It may be argued that in the present case there is some little difference, but we have inspected foundries under the old conditions and have seen them in operation in Pittsburg under the new conditions. We have watched the New Jersey coal handlers at work unloading cars, and while we can only at this time assume that the machinery will properly do the work, as no great corporation is going to experiment in this direction on a large scale, it seems to us that the results will be found very much the same. The problem that seems to interest our daily contemporaries is only this: What will become of the 4,500 workmen? They only ask the question; they do not undertake to answer it in the light of similar changes in other fields of American industry where the test of national ability of adjustment of economies has been even more severe. Without going into statistics, we can say that in practically every industry in the United States where labor-saving devices have replaced large bodies of men within a short time after the change there was work enough for all of them. Trade increased, the demand for men was greater, the workers of intelligence received better wages in positions requiring more than manual labor, and those who were not cared for in that way found opportunities in the lower spheres through an increased demand for workmen in their own class in other fields growing out of the larger output of primary materials made necessary by the labor-saving machines.

While our readers are only incidentally concerned in the fate of the 4,500 men, it may be said that the new system will eventually

have the effect of keeping coal at a normal price, it will prevent costly strikes, it will indirectly increase the demand and most of the workers will find employment at the mines, where they will receive better wages, if they care to do more than boys' work, while those who remain to take care of the machines will be paid higher wages than they have been receiving for doing mere manual labor. It may take a few months for the adjustment to become fully operative, some few of the less willing and intelligent workers may suffer, but, on the whole, the 4,500 workmen will be in a degree better off a year from this January 1st than they are to-day.

In the battle of Men vs. Machinery, there can be no final victor except the Men. So long as perpetual motion is an unsolved problem that will always be the situation. It is the experience in America that every successful labor-saving device has created fresh and renewed demands, that industries affected by it have soon required the services of more men to run the machines than were previously needed to do the entire work. This is true in so many fields that it is hardly necessary to particularize. It is a feature of American progress and a very important one.

NEW BRITISH MINISTER.

MUCH interest has been aroused in America by the report that the salary of the British Ambassador to the United States has been raised from \$30,000 to \$50,000 a year. The former salary was paid to the late Lord Pauncefote and to the late Sir Michael Herbert, who previously represented Great Britain in America. The new minister, Sir Mortimer Durand, is credited with receiving the higher salary, and if the report is true—we have seen no denial of it—it is of much greater importance, politically and commercially, than surface indications would seem to show. The British Minister to this country is given a fully furnished residence at Washington in addition to his salary, and if the latter allowance has been raised to \$50,000, it puts him on a par in both respects with the President of the United States, a remarkable thing, to say the least. It also makes him the highest-paid diplomat in America.

There are other considerations, however, of more moment than those we have mentioned. In order to realize the full force and importance of the change it is necessary to bear in mind that the British Ambassador in Paris receives \$45,000 a year and a magnificent official residence, which was formerly the palace of Princess Pauline Borghese, the beautiful sister of the first Napoleon. The British Ambassador at Berlin has \$40,000 and a residence, the Ambassador at Rome has \$35,000 a year and a residence, the Ambassador at St. Petersburg \$38,000 a year and a palace, while the Ambassador at Constantinople has \$40,000 a year, and not only a palace in the city, but also a beautiful suburban palace at Therapia. It will be seen, therefore, that the embassy at Washington is advanced from last in this list to the first position, and it is fair to assume that change of rank goes with the increase of salary, demonstrating that the British Government has come to attach a new value and increased importance to the American mission. We have often referred to the fact that the relations between Great Britain and the United States have been rapidly growing closer, and this official recognition of the increased importance of the position of Ambassador to this Republic serves to give fresh evidence that the changed conditions are fully appreciated in the proper quarters.

The new minister has already presented his credentials to the President and has been accorded a reception befitting his rank. From what we have learned about him we have no doubt of the fact that Sir Mortimer will prove a valuable representative of his government and will be an important factor in continuing the present policy of increasing the cordiality of the trade and diplomatic relations between the two Powers. He certainly begins service at Washington with the heartiest good wishes of all Americans.

THE value of the closer relations between the United States and Hawaii is shown in the fact that in the thirty years that have elapsed the sugar production of the latter has increased from 23,129,101 pounds to 840,000,000 in 1903. Much of the gain has been within the last decade.

AMERICA'S BIGGEST BRIDGE.

Great Function Made of Opening of New Structure Connecting New York Boroughs.

NEW YORK is growing greater in every way, and the last month of the year just gone saw the culmination of an enterprise which brought one of its boroughs into closer connection with the old New York City on Manhattan Island. Brooklyn, across the broad East River from New York, used to be a big city, but New York absorbed it a dozen years ago, and bridges and tunnels are in progress which will tend to wipe out the physical dividing line. In fact, there are some enthusiastic people who foresee the day when the big East River will be filled in and bridges will simply become elevated railroads, while tunnels will do the work done by the tubes in London. More thoughtful people do not believe that the East River will ever change its course unless a convulsion of Mother Earth occurs. However that may be, a new bridge was opened between the two boroughs of New York City on December 19th that was an event of national, as well as municipal, importance. The new bridge is the greatest of its kind in America, probably in the world.

The opening of the bridge was made the occasion for decorations and pyrotechnics on a grander scale than has ever before been planned by New York City. The day show was a spectacle of the structure with its webbing fairly hidden in bunting, flags and the green of the hemlock. But the night exhibition surpassed everything that the pyrotechnist had achieved before. Thirty-five thousand flags, some of them 50 feet long, were used in the decoration of the span and approaches, and 15,000 feet of natural hemlock boughs twisted into ropes entwined the lower towers and parts of the approaches of the span. At each of the entrances stands of colors filled the air with red, white and blue, and each upright was hidden in a mass of patriotic hues.

The grand stand in the middle of the span was draped with tricolored bunting and American flags from every point where one could be made to wave. About its uprights were entwined ropes of hemlock, making it a bower of green. The speeches were made from under a canopy of big American banners.

At night the entire structure, from anchorage to anchorage, across the great span over the river, and the ends of the approaches, were outlined in incandescent electric lights. There were about 20,000 of these, and they sparkled from the main cables and all the hanging parts of the huge web and outlined every girder and brace of the lattice-work towers from their foundations to their apexes. It was a magnificent spectacle.

At each approach were electric stars made of huge clusters of incandescent lamps, and the coat-of-arms of New York City was displayed in colored lights over each entrance. In the center of the span, directly over the middle of the river, was shown an immense American flag in colored electric lights. Supplementing the electric display was a show of fireworks that lasted an hour. The chief figure of this exhibition was a set-piece, representing Niagara Falls. This was 1,000 feet wide and the fall was from the roadway of the span to the river itself, a distance of nearly 140 feet. The falls were represented as never before in fireworks. Topping this cataract of fire, and shown above the main cables at the same time in pictures of fire, were the faces of five men prominent in the work of constructing the bridge.

The new bridge is the second of a series between the two boroughs, but it is so much larger than its twin brother close by that although the latter was for years a world's marvel, the new and larger bridge almost eclipses it. In comparing the greatest bridges of the world—and it is only possible to arrive at an estimate of the proportions of these enormous structures by comparing them with one another—it is difficult to make a general statement of superiority, inasmuch as one may have a larger span, another greater foundations, one higher towers, another greater carrying capacity. But in the one true test, that of capacity for traffic, the new East River bridge is by far the greatest of its kind in the world.

Its main span, 1,600 feet between towers, is only a few feet in excess of the Brooklyn Bridge, which is actually greater in over-all measurements, its distance between anchorage and anchorage of 3,455 feet being several hundred feet greater than the East River bridge. But the total length of the new structure is 7,200 feet, and its extreme width is 118 feet, while that of the Brooklyn Bridge is only 85 feet. This great width provides two 20-foot roadways for vehicles, four trolley car tracks and two elevated railroad tracks, while above the trolley tracks are two 18-foot roadways, separated into bicycle and footpaths.

The foundations of the new bridge consist of timber caissons, filled in with concrete, above which rise piers of limestone to water level. Above water the limestone has a granite facing. On these piers rest the steel towers, each weighing 3,048 tons. Most imposing are the anchorages for resisting the pull of the cables which sustain the enormous weight of the bridge. These structures are 182 feet in width and 158 feet in depth. Forty feet of the mass is below the street level, above which they rise to a height of 80 feet.

In each anchorage are 1,500,000 feet of timber, 10,000 cubic yards of concrete, 45,000 cubic yards of stone masonry and 1,700 tons of anchor steel. With a total pull from the four cables of 20,050 tons, rotation of the anchorages had to be provided against, and this was done by making the forward part of the structure hollow and massing the masonry at the rear. The four enormous

steel cables supporting the great structure, and which have a carrying capacity double that of the Brooklyn Bridge cables, are made up of thirty-seven strands, each strand containing 281 wires. There are, therefore, 10,397 wires in each cable, or 41,588 in the four cables. According to specifications, each wire had to possess a breaking strength of 200,000 pounds to the square inch and be capable of being coiled cold around a rod of its own diameter without breaking. The most elaborate precautions were taken to prevent oxidation, and all the wires of each cable strand are spliced to form one continuous wire. Over each cable is a covering plate of steel.

Translating the tonnage capacity of the new bridge into persons, it is found that 128,000 passengers an hour can be handled on the new structure, 70,000 on the four trolley tracks, which can accommodate 350 trolley cars in that time, while 58,000 can be handled by the elevated trains. The cost of the bridge was \$15,000,000.

Chinese to Print Newspaper in New York.

ONE of the signs of the times in cosmopolitan New York City is the new project to establish a Chinese newspaper in this community. Tong Chew, a young Chinese reformer from one of the first families in the Flowery Kingdom, arrived in New York last month to fill the position of editor-in-chief of the paper. The newspaper, the first issue of which will appear on the Chinese New Year—February 16th next—is to be published by three wealthy Chinese merchants in New York, and will be the official organ of the Chinese Empire Reform Association, the largest political society in the world, having a membership of 5,000,000. The object of the association is the complete remodeling of the present form of government by education and the modern methods of the civilized countries of the West.

Tong Chew, at the time of his call here, was an instructor in one of the reform colleges at Yokohama, the Dai Tung Hok Hoh. For some time the members of the Chinese Reform Association in New York have been anxious to have an official organ here. During the stay here of the two great leaders of the reform movement, Choy Se Kan and Leong Kai Chui, last spring, they made 11,000 converts of the 20,000 Chinamen hereabout. There were then 3,000,000 active members of the association. The number has since nearly doubled.

The paper will be first published as a weekly, but will probably be soon changed to a daily, with a full staff of editors and reporters after the latest methods of metropolitan journals, and complete daily reports by cable of the most important news from China and all the local happenings of interest to its readers. There will be advertisements, of course. The size of the new paper has not yet been determined upon, but it will probably be eight pages of seven columns each. The press and printing plant are now on their way here, and the Chinese printers will soon start for this country. The office will have all the latest newspaper appliances.

The work of publishing a Chinese newspaper will be appreciated when it is known that there are 50,000 separate characters in that language, each word having a symbol for itself. It is not absolutely necessary to use all these characters, but at least 20,000 must be employed to properly represent what a writer desires to say. The article is read from the top downward in narrow columns, one character directly below another.

The name of the paper will fitly express its object. Its main feature will be editorials appealing to Chinamen in America and the mother land to join the reform movement. The price will probably be so low that all may buy it. The daily will likely be sold for 1 cent. It is expected that it will circulate not only in this country, but in China. The one daily Chinese paper published in the United States is the *Chinese Daily World* of San Francisco.

The new editor, Tong Chew, who is only 24 years old, has been educated on the lines in vogue in American colleges and speaks four or five languages other than English.

America as a Nation of Advertisers.

FRANK PRESBREY, of New York, vice-president of the Association of American Advertising Agents, in a recent lecture on "The Evolution in Advertising," gave advertising much credit for the success of the American nation, from a business standpoint, maintaining that people cannot buy what a dealer has for sale unless they know that the article exists, advertising being the means of conveying that information. Mr. Presbrey said in part:

"Advertising is as old as the human race, but it has two histories—the history of advertising as an institution and its history as an art. The history of the art of advertising began recently, but advertising proper runs back through the ages and into the haze that hides the beginnings of humanity.

"Advertising in our own country began with the establishment of newspapers, and America may fairly claim to have developed advertising as an art. The development of advertising is very recent—a matter of less than twenty-five years. Advertising has wrought a revolution in the periodical literature within the last two decades, and has brought down the cost of our newspapers, giving us more of them and enlarging their circulation and influence.

"We are a nation of advertisers. America also leads in the excellence of advertisements, from an artistic, as well as literary, standpoint. It is one of the modern manifestations of a part of our machinery for living, and it is improving the lives of the masses by cheapening luxuries and teaching their uses."

OUR AUSTRALIAN TRADE.

Delightful View of the Country Taken by an American Newspaper Correspondent.

FRANK G. CARPENTER, the eminent American newspaper man, who has been investigating American trade conditions abroad, writes interestingly in the *Washington Star* of our trade with Australia, which, he says, is "advancing by leaps and bounds, but the market is appreciated by only about two score of American firms, who do most of the business." Mr. Carpenter adds: "The field is open to all. The Australians are the nearest like Americans of any people on earth. They have the same wants, and, more than that, they have the money to satisfy them. They have more than \$150,000,000 in their savings banks alone, or on the average one such account for every family. In New Zealand every family annually takes about \$25 worth of American goods, and in the province of New South Wales, the greatest of the Australian States, the sales of our goods amount on the average to \$50 per family. Think of a State where every man, woman and child is annually consuming \$10 worth of our products, and you get some idea of the favor in which our manufactures are held there. I say manufactures, for that is what Australia buys. It produces the same raw materials that we do in the shape of wheat and wool and the precious metals, and it has no great factories and mills to eat up our cotton, iron or coal.

"Indeed, the Australasians spend about as much money as any people on the face of the globe. The minimum wage in many parts of the country is \$1.70 a day and in others it is \$2 a day and over. The wages of mechanics are high, and altogether the people are as well paid as any on earth. In addition to this the Continent is run on the eight-hour basis. The people have plenty of leisure and many holidays, during which they spend money, and, as a result, they have a foreign trade of enormous proportions in comparison to the population. This trade amounts to about \$800,000,000 a year, and that for a people who number just about 5,000,000.

"I wish I could take you to the New York of Australia and show you the enormous ships lying in the harbor. There are 10,000-ton vessels from London, Hamburg, Marseilles and the other great European ports and smaller vessels from India, China, Japan and the islands of the south seas. There are 6,000-ton boats from San Francisco (U. S. A.) and vessels of equal size from South Africa. Sydney has already 500,000 people and it grows like the beanstalk up which little Jack climbed to fight the giants. Sydney stands about third among the great British cities in trade. It is only exceeded by London and Liverpool, and it does more business than Havre, the chief port of France. Several American firms have houses in Sydney and transship our goods from there to all parts of Australia.

"But what do we sell away down there below the equator? A recent shipment of one of the big San Francisco steamers included 400 tons of sewing machines, 1,000 tons of fencing wire, 400 tons of roll paper and 80,000 cases and 1,500 barrels of kerosene. There were also rifles, guns and revolvers, tons of Philadelphia lawn-mowers, Chicago reapers, wagons knocked down, coffee mills and all sorts of patent medicines. Another cargo arrived about the same time, bringing twenty-four locomotives from Wilmington, Del.; 700 tons of paper and 4,000 tons of other manufactured goods. This last shipment was valued at \$1,000,000.

"About two years ago I traveled over the greater part of eastern Australia. I found our reapers and mowers for sale in every town and was told that the Australians liked our farm tools. So far only the heavy agricultural machinery is being properly pushed. Our implement firms work Australia as carefully as they do their home territory, and they have to fight for every inch of ground with the Canadians and European exporters. Nevertheless, they have the bulk of the business and they make a good profit.

"The same should be the case with the lighter farm tools. All sorts of farm implements, plows, hoes, forks and rakes might be sold in large quantities, as well as every class of American goods made of iron and steel. Our carpenter tools are popular. Seven-tenths of all the saws used in that part of the world come from the United States, and the American ax is considered the best in the market.

"Among the biggest purchasers of Australia are the colonial and municipal governments. They control the railroads and buy in quantity for both the electric and the steam roads, so that our steel trust agents can make big sales if they know how to work the officials. As it is now, American engines are used on many of the lines and some tracks are laid with American rails. There are a few Pullman cars and other kinds of American rolling stock. Australia has now about 13,000 miles of tracks and the governments are pushing the roads in different directions to develop the country.

"Government sales can also be made in New Zealand, where American goods are especially favored because of the speedy filling of orders. The English manufacturer wants a year's time to supply a given number of engines, while the American will furnish them within a month or so after getting the order. This is so as to bridges, dredges and the materials for public works.

"The Australian field is about the easiest to work of all the fields washed by the Pacific Ocean. The American who goes to China, Japan or other countries is bothered by the languages and the strange customs of the people. Australia is a second America. Business is done there in about the same way as at home, every one speaks English, and special favors are given to commercial travelers. On most of the railroads reduction of 20 per cent. is made

on commercial travelers' tickets, and there is a special rate for their baggage. At the hotels they are charged but \$2 per day, and they are usually treated with greater respect than other guests.

"In all the larger cities of Australia and New Zealand you will find some Americans. Melbourne especially has many, whose fathers came in from San Francisco when gold was first discovered. Some of them made fortunes. They engaged in business, and to-day Melbourne is called the Yankee city of Australia. A large number of Australian cities are now equipped with American street cars. American shoes are sold in Sydney and Melbourne and American shoe stores, such as are now being established in Europe, could be run in Brisbane, Sydney, Adelaide and Auckland at a profit."

American Implements in Paraguay.

IN our last issue we mentioned the fact briefly that considerable interest is being manifested in American agricultural implements in Paraguay, and printed a request that catalogues be sent to Moises S. Bertoni, the director of the Government's agricultural college. Since then we have received a report from John N. Ruffin, the United States Consul at Asuncion, where the college is located. Consul Ruffin says that he has had a conversation with Dr. Bertoni, in which the latter expressed a desire to have American manufacturers of agricultural implements, such as plows and machinery of different classes, send him catalogues, etc. Dr. Bertoni said he would be glad to exchange correspondence on these matters, which are of such great importance to Paraguay at this moment. He further states that a great many plows which go to Paraguay are not adapted for plowing the peculiar soil of Paraguay, and in consequence made trade unfavorable in the districts where they have found their way. If suitable plows were sent to the agricultural districts they would sell readily. Dr. Bertoni stated that, owing to the scarcity of labor, Paraguay will be forced to buy largely of agricultural machinery. He is at the head of the National Association of Agriculturists.

Equal Chance for Foreigners in Manchuria.

IN discussing Russia's commercial relations with Manchuria, *Boyd's Commercial Guide for China* (Shanghai) makes the following comment of interest to American exporters and the traders of other nations:

"Despite her great railroad, Russia has no real advantage over the foreigner. Under the present conditions of the road no bulky cargo can pay for its transportation, and even under proper conditions the major part of the freight will go by sea. For instance, glassware, tobacco and other lines of merchandise cost 1 rouble (2s.) freight per pood (36 1/12 pounds) by sea from Odessa, but over 2 roubles via the Chinese Eastern Railroad. As a matter of fact, foreign goods have been in Manchuria for three years, at least, and are so favorably known that efforts are already being made to counterfeit the more prominent articles. Russian settlements are springing up in northern and northeastern Manchuria, but the wants of these people are not extensive. It is, therefore, problematical whether the Manchurian market will become a larger consumer of Russian goods. It will depend more on the lack of enterprise on the part of foreign merchants than on the superiority of Russian methods."

United States Trade with New Zealand.

A GRATIFYING increase in exports from this country to New Zealand is shown by the statistical returns for 1902, which record an amount of \$6,594,685, as compared with \$3,876,545 in 1899. A few items, which are mentioned by *American Industries*, are instructive. Shipments of boots and shoes have increased during the period covered about 420 per cent., while cotton piece goods were exported in nearly twelve times the quantity of the earlier year named.

The typical New Zealander has evidently not had time to think about his journey to London, to view the ruins of St. Paul's, for besides distributing American goods, he has been hard at work improving the quality of his hemp and last year shipped to his American friends more than four times the quantity furnished them in 1899, while almost doubling the exports of wool and sheepskins in comparison with four years ago.

Pays to Satisfy Customers' Requirements.

SOME remarks addressed to English houses by a correspondent of the *Sydney Morning Herald* are not without interest to American manufacturers. The writer (a West Australian dealer) complains that owing to the unwillingness of English makers to carry out special instructions in putting up canned goods and mustard, he has been obliged to take up German articles, which have now superseded the respective British products. Lumber in special sizes, which no English sawmill would furnish, he got without difficulty from America. The writer concludes by telling his fellow-subjects that if they attended to customers' wants they would not require preferential tariffs to help their colonial trade.—*American Industries*.

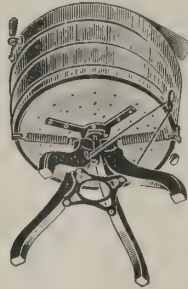
Novelty in Shoes.—A novelty in the American shoe trade is a white shoe with black straps and trimmings. This is said to have originated in the city of Chicago. Opinion is divided as to whether or not a combination of colors in shoes will ever catch the popular favor to any important extent.

"1900" Washing Machine

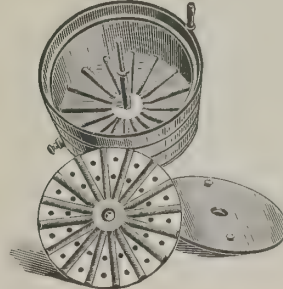
AND ITS PARTS.



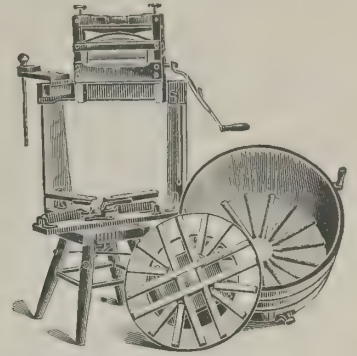
Interior view, showing clothes in process of washing.



Looking under Bottom of Washer.



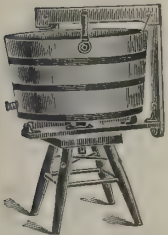
Inside view of Tub and Bottom of Agitator.



Shows Washer with the tub removed from the frame and the agitator or disk which rests on the clothes and water during washing. It also shows the wringer in position as when in use.



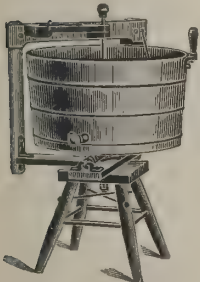
"1900" Washer.



"Domestic" Washer.



"Home" Washer.



"1900 Junior" Washer.



"1900" Washer.

A Remarkable Record!!!

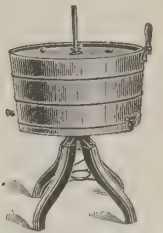
Reward of Merit!!!

Commencing in the year 1900 to manufacture the "1900" Washing Machine, we at that time "turned out" an average of Five Washers per day. During the month of August, 1903, we manufactured and sold OVER FOUR HUNDRED Washers per day.

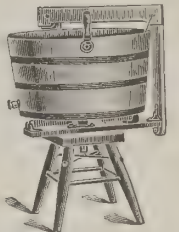
A Remarkable Record!!!

Reward of Merit!!!

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-one years' practical experience in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment**, but by the adoption of our **agitator** tosses and tumbles the garment through a **whirlpool of water**, thus **forcing the water through the finest or coarsest fabrics**, causing the clothes to become **ABSOLUTELY CLEAN**, without boiling or scrubbing, without wear or tear, and without the use of chemicals.



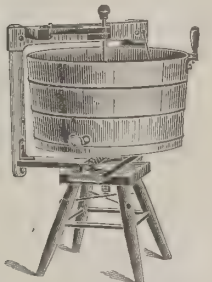
"1900" Washer.



"Domestic" Washer.



"Home" Washer.

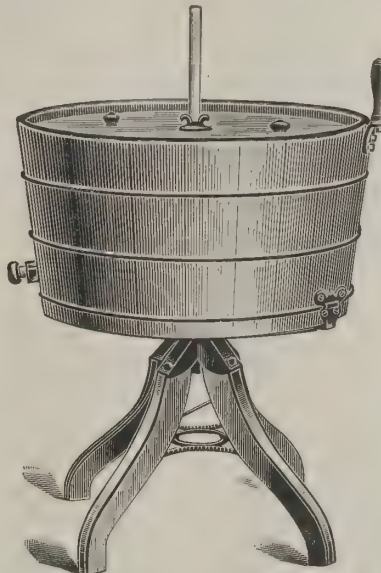


"1900 Junior" Washer.



"1900" Washer.

"1900"
Ball = Bearing
Washing
Machines.



THE "1900" WASHING MACHINE.
Complete, Ready for Use.

"1900"
Ball = Bearing
Washing
Machines.

Special Offer for Foreign Markets Only:

\$22.75

Upon receipt of **Twenty-two Dollars and Seventy-five Cents** in U. S. gold, or its equivalent, we will box, ready for steamer, and deliver F. O. B. cars at New York City, **One of Each (Four in All), "1900," "1900 Junior," "Domestic" and "Home" "1900" BALL-BEARING WASHING MACHINES.** Weight of the four machines, boxed, 340 pounds.

To facilitate our increasing export trade we desire to communicate with one responsible business house in each trade center of the world.

Tens of thousands of the "1900" Washing Machines have been sold in the United States, as well as in all parts of the world. Many of our agents at home are making over \$200 per month. Live men in your vicinity can do as well.

Orders received direct or through export houses; when ordering through the latter, to avoid errors, please mail us a duplicate of order. Our Illustrated Catalogue mailed postpaid.

The "1900" WASHER COMPANY
BINGHAMTON · NEW YORK · U.S.A.

MARVELOUS DEVELOPMENT.

Trade in Candy, Not a Necessity, Grows from Nothing to \$150,000,000 a Year in 25 Years.

A STUDY of the candy industry of the United States made by the New York Times gives some idea of the wonderful development of the United States in lines of trade which do not involve the necessities of life. Within twenty-five years the candy industry has increased from almost nothing to about \$150,000,000 a year. A quarter of a century ago there was not an exclusive candy manufacturer in a large way of business. The candy manufacturers of those days usually made crackers or similar sweetmeats, together with cigars and other goods of that character. The candy manufacture of twenty or more years ago was confined almost exclusively to kisses, stick candy, lozenges and gumdrops. To-day the varieties run into the thousands, from a cheap gumdrop to a high-priced chocolate. The proportion of high-priced goods has increased very largely of late, and cheaper grades of confectionery are no longer purchased in any quantity by a majority of consumers. Perhaps twenty years ago a man who employed careless or wilfully dishonest methods could succeed, but that time has passed, and the manufacturer who doesn't make pure goods can no longer sell them, excepting in a small way, and the pure food laws will interfere with his operations in almost any State in the Union.

According to what may be assumed to be substantially reliable figures, candy costs the people of the United States about \$150,000,000 a year. In 1890 the output was \$81,290,543, and in 1880 \$25,637,033. In 1880 there were 1,450 establishments making candy, which had increased in 1900 to 4,297, while the capital invested increased from \$8,486,874 in 1880 to \$35,155,361 in 1900.

New York is preeminently the candy city of the world. It has more establishments engaged in its manufacture and more stores handling it than any other city on earth, according to the Times. The output of England, France and Germany is not as large as the output of the United States, and probably New York City alone produces more than either one of the three countries alone. The iron and steel outputs of New York State together do not equal in value the candy output, indicating that the business has assumed the proportions of a giant among the manufacturing industries, and the increase has been so rapid that it is scarcely comprehended by the public.

A generation ago candy was looked upon by austere people as entitled to consideration only as an indulgence of childhood. Ruin to the teeth, impairment of the digestion and general derangement of the system were popularly supposed to be the rewards of candy eating. Physicians strengthened this conclusion and prepared and published elaborate essays against the consumption of confectionery. That view of the situation has passed away. Accurate scientific investigations, extending over a large series of years, and observations under widely varying conditions, prove that candy is highly nutritious and is a valuable food. After usual muscular exertion there is a strong craving for sugar, and observations conducted by war departments in several countries prove the efficacy of candy as a food suitable to maintain the strength under very strenuous and ordinarily fatiguing circumstances. Experiments made in South Africa during the Boer war demonstrated the practicability of a diet of jams, chocolates and other confections when troops were compelled to make long and severe marches.

Nearly every process of manufacture is now carried on by machinery, and an experienced manufacturer said to a Times reporter that within a few years it will be unnecessary to touch the hands to candy at all. Every operation will be done by machinery. Naturally, this improves the quality, because nothing is so inconstant as the human hand, and all processes of confectionery making require constancy, otherwise variation will creep in.

Increased Export Demand for American Carbon.

AN American engaged in the trade reports that there is an increased demand in Europe and in other parts of the world for American blacks, the carbon products used largely in printing ink, varnishes and various manufacturing lines. This gentleman returned recently, after a trip to Great Britain and several of the Continental countries, and while abroad he closely observed the conditions affecting the American carbon business. His firm has houses in London and Paris and branches in other European cities.

"England, France and Germany are our best customers," he said. "The American manufacturers control the markets for blacks made of natural gas, because nowhere outside of this country is the natural gas available. Notwithstanding this fact, the German lawmakers have enacted a tariff provision increasing the duty. The measure was designed to reduce our exports, but does not accomplish this, because the Germans must buy the blacks here or do without them. The only effect, therefore, is to increase the price to the German consumers.

"Within three years our house has built up, not only a domestic, but a foreign trade in decolorizing carbons. Germany until recently supplied the world with this product. Not much was known outside of that country as to the process of making the articles. We make it now from animal carbon and have been quite successful in wresting a fair share of the trade from Germany. We are even selling in Mannheim, in that country. The article is

largely used there in the works at which quinine is refined. We have also begun to supply some of the refiners in Paris, who are noted for the excellence and purity of their drug.

"Another use of this kind of carbon is in decolorizing wine. For this purpose the consumption has increased enormously in recent years. Millions of pounds are used annually in France in changing red wine to white wine. The flavor is not altered and the process is absolutely harmless. Our carbons are also used in refining cream of tartar, morphine and other chemicals."

Great Gain in Our Trade to Various Countries.

THE value of South Africa as a market is the subject of some special attention at the present time, by reason of a report upon that subject recently presented to the British Parliament. This report shows that the British colonies in South Africa have become of greater importance than any other of the British colonies except India.

"Ten years ago," it says, "Great Britain's exports to South Africa were valued at a little under £9,000,000; last year they almost reached £26,000,000. In 1893 South Africa stood sixth on the list of Great Britain's customers; last year she stood second, and was only beaten by India. It is no rash prediction that this year she will pass India and stand first on the list as the largest buyer in the world of the produce and manufactures of the mother country."

This statement of the great advance and rapidly growing importance of South Africa as an importing country lends especial interest to some figures just prepared by the Department of Commerce and Labor through its Bureau of Statistics, showing the growth of exports from the United States to British Africa and to Africa as a whole. These figures show that the exports from the United States to British Africa have grown with even greater rapidity than those from the United Kingdom.

Exports from the United States to British Africa grew from \$3,688,999 in 1893 to \$33,844,395 in 1903, or, in other words, were nine times as much in 1903 as in 1893, while exports from the United Kingdom to South Africa grew from \$39,896,000 in 1893 to \$125,280,000 in 1902, the 1903 figures not being yet available. Thus, while exports from the United States to British Africa are in 1903 nine times those of 1893, those from the United Kingdom were in 1902 but three times as much as those in 1893.

The total exports from the United States to Africa have grown with great rapidity—from \$5,196,480 in 1893 to \$38,436,853 in 1903, being more than seven times as much in 1903 as in 1893, while to Asia and Oceania our exports grew from \$28,064,038 in 1893 to \$95,827,528 in 1903; to South America from \$32,639,077 in 1893 to \$41,137,872 in 1903; to North America, other than the United States, from \$119,788,889 in 1893 to \$215,482,769 in 1903, and to Europe, from \$661,976,710 in 1893 to \$1,029,236,657 in 1903.

Air Power Runs Miniature American Railroad.

TWO miniature railroads, fully equipped for the business required of them, are in operation in Milwaukee, U. S. A., one at the Menomonee Valley plant of the Milwaukee Gaslight Company and the other at the works of the Milwaukee Cement Company.

The line at the gas works is a novelty in many ways, one of the most interesting features being that the locomotives are run by compressed air. The tiny locomotives are equipped with powerful "boilers," which are, in fact, air tanks, capable of withstanding a pressure of 1,000 pounds to the square inch. Air is applied by means of a compressor at the plant, from which a pipe line extends along the entire system. Whenever the air gauge shows that the pressure is becoming low the engineer stops at a hydrant and air is pumped into the tank sufficient to run for a considerable time.

Unlike many miniature locomotives, those at the gas works are driven in exactly the same manner as a steam locomotive. The power is transmitted to the drive wheels directly from the cylinder by means of the usual driving rods. The engine-driver's cab resembles the cab of a mogul engine, but the interior is much different. There is no heat, no stoke-hole, no water-gauge, no blow-cocks and no fireman. The system is two to three miles long, counting the sidetracks and spurs that reach into every part of the mammoth plant. The line is equipped with tiny flat cars, gondolas, dump-cars and special cars used in transporting coal to the fire-rooms and to the retorts.

At the Milwaukee Cement Company's plant the railroad is equipped with steam locomotives and tiny cars hardly larger than a wheelbarrow. This line extends from the mills to the quarry, where the rock from which the cement is made is procured.

Quick Work in an American Factory.—A factory at South Haven, Mich., U. S. A., makes about 2,000,000 ordinary peach baskets every year, 150,000 berry crates, 1,400,000 berry boxes and between 80,000 and 100,000 bushel baskets. Logs go into one end of the factory and come out baskets at the other end at the rate of 15,000 a day. Beech, elm, maple and basswood are used.

Important Patent Suit Decision as to Suspenders.—A decision has been filed in the United States Court upholding the validity of the MacWilliams patent upon "President" suspenders controlled by the C. A. Edgerton Manufacturing Company. This decision is of much importance to the trade.

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THE "COPLY," PLATE 1035 G.

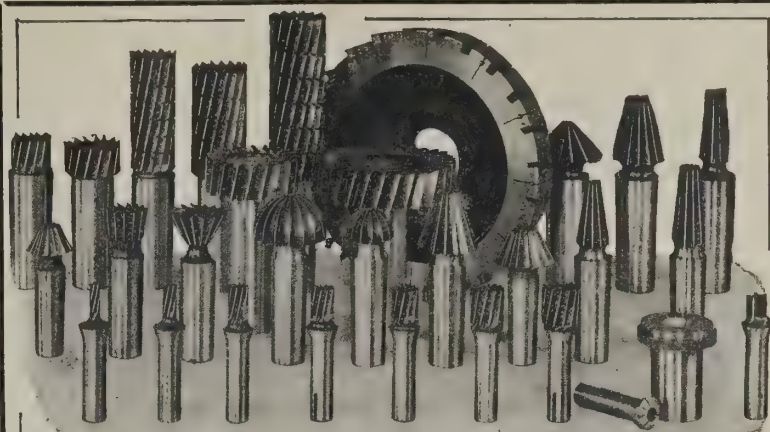
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are made in many beautiful and artistic patterns, in one piece, free from cracks or plaster paris joints, and are therefore absolutely sanitary.

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Our beautiful book shows the "Copley" and other "Standard" fixtures, with approximate costs, and will be sent free on request.

Every piece of "Standard" Ware bears our "Green and Gold" guarantee label, and has our name "Standard" or initials "S. S. M. Co." cast in relief on the exterior. No others are genuine.



We manufacture and carry in stock MILLING CUTTERS of every description. Not only those suitable for our Vertical Milling Machines, but Plain and Straddle Cutters as well. We will be pleased to study your requirements and to design and make cutters to reduce your shop costs.

We also manufacture Vertical and Horizontal Milling Machines and Automatic Gear Cutters.

Our machines received GOLD MEDAL—the highest award—at the Pan-American Exposition.

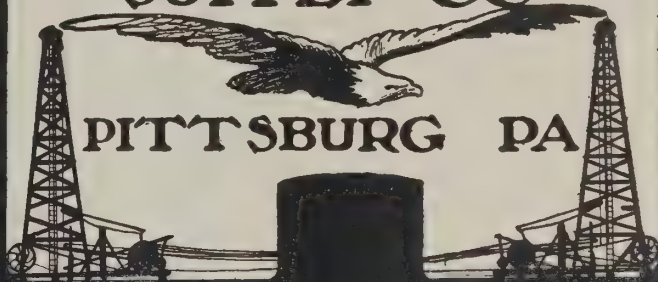
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**Derricks and Rig Irons,
Boilers and Engines,
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The OIL MANUFACTURERS do not like CROSS OIL FILTERS because it cuts their receipts in half. ❀ ❀ ❀ ❀



The FAIRBANKS BOSTON RIM Co., Bridgeport, Pa., says: "Immediately after our engineer had the Cross Oil Filter in position we commenced using less oil than before; so much less, in fact, that the manufacturer from whom we had previously purchased about two barrels of oil per month and with whom we had always been on friendly terms, accused us of buying our oil elsewhere, as, indeed, he had reason to believe we were, from the fact that the orders he received from us dropped off about one-half after putting in your Filter."

Let us send the Cross Oil Filter on thirty days' trial; if unsatisfactory, return at our expense.

BURT MFG. CO., Akron, Ohio, U.S.A.
Largest Manufacturers of OIL FILTERS in the World.

NEW PRINTING PROCESS.

Wonderful Discovery of an American Will Replace Lithography at a Great Saving of Cost.

AN invention of a New York man, which he calls the lithotype, promises to revolutionize printing processes, for it involves the discovery that aluminium plates can be used in all the varieties of printing in which lithograph stone has hitherto been employed, and that the plates can be printed on fast rotary presses, instead of the slower flat presses. For the new process it is claimed that in facility it is 100 to 1 better than the old method and its cost is just one-twentieth.

For the uninitiated the present process of printing the modern daily paper may be briefly described. First, the matter to be printed is handed to the linotype, or type-setting machine, operator, who puts the manuscript matter into solid lines of type. This type is arranged in columns in a page and this is turned over to the stereotypers, who take an impression on a moist matrix of papier-mâché. This matrix is then dried out on a steam table and put in a casting machine, where curved metal plates are made from it. Each of these plates is a page, and when all are clamped on the cylinders of the big presses, the wheels revolve and the paper is printed direct from the raised metal surface of the plates.

This process marks an almost immeasurable advance over old methods of printing, and the linotype does its work of first setting and then distributing type with a precision once thought only possible for human fingers directed by human intelligence. But this process is greatly simplified by the lithotype. If it is developed along logical and apparently easily possible lines the newspaper of the future will likely come into being in about this fashion, according to the *New York Times*:

The machine operator, at a keyboard like a typewriter, will put the matter from the editorial pens on a strip of paper perforated by an electrical device to the resemblance of a record for an automatic piano. This perforated strip is run into a second section of the same machine, which translates the little holes in the paper into letters, words and spaces, which are printed directly on to the surface of a strip of paper treated by a special process. This strip of printed matter can be made of any width desired. When the column is complete the paper is pressed directly on the prepared aluminium plate, causing the ink to adhere to the plate. After the impression is made on the aluminium the paper is removed and the plate is fastened to the cylinder of the press, the wheels start and the papers come out printed directly from the smooth surface. There has been no type used except little dies, fitted in a receptacle, like a sewing-machine bobbin, in the second section of the lithotype.

The process of printing from a flat surface is vastly interesting, but probably familiar to not more than one person in a thousand. It is done on the simple principle that oil or grease and water won't mix. The designs to be printed from lithograph stone or aluminium plate are defined in ink, the basis of which is grease. Over the rest of the plate a roll, moist with water, is passed, and when the surface of the plate comes in contact with the paper nothing prints except that portion previously marked out in grease. The process, hitherto confined exclusively to lithograph work, may now by the use of the aluminium plate may be made available for use on fast web-perfecting presses such as are used now by modern newspapers.

The New Yorker who has perfected the whole new process says that the present style of rotary perfecting press can, with few changes, be adapted to the new method. These changes will be the addition of a water motion to correspond with the ink fountain and a change in the cylinders to accommodate the thin aluminium plates. The inventor is confident that his inventions will work great changes in printing methods, but he points out that new inventions, while largely taking the place of old devices, have never succeeded in completely eliminating old methods. On this point he contents himself with saying:

"The new process will largely reduce the use of relief plates, and will eventually and practically do away with the use of type. It will materially cheapen letter-press printing, and that means more printing. Every invention which has cheapened production has increased the output."

Regarding the saving of labor, the inventor says it will be at least 25 per cent. It will also cut down the demand for skilled labor. In fact, it is assumed that girls, having a defter touch, would be preferred above men as operators. The output of the machine has no limit except the capacity of the operator to manipulate the keys.

"By this method," says the inventor, "a printing plant will be reduced to the lowest possible cost. All that will be necessary for the outfit is one or more lithotypes, a press to transfer the printed slip to the aluminium plate, a grain-in machine to prepare plates and a rotary press."

New Methods in the Turpentine Industry.

THE discovery of a new way of extracting turpentine, made two years ago by Dr. Charles H. Herty, working under the direction of the United States Bureau of Forestry, is resulting in a complete change of methods by the turpentine operators of America, as predicted by *THE AMERICAN EXPORTER* last year.

In a bulletin published last spring by the Bureau of Forestry the claim

was made that the experiments with the new cup and gutter system of turpentine had resulted in an increase over the old boxing system of 23 per cent. in the amount of the product extracted. This figure has been now raised to more than 36 per cent. In other words, Dr. Herty's system, when universally adopted in this country, as it is certain to be, sooner or later, will have raised the turpentine production of this country by more than a third, provided the same number of trees are used.

Two years ago, when Dr. Herty first made known his discoveries, he put 20,000 cups into operation. Last year this figure was increased to about 400,000. This year a conservative estimate places the number of cups to be used at 3,000,000. The figures give some indication of the rapidity with which turpentine operators are adopting the new system. The change of methods has been so rapid that the pottery company which undertook to supply operators with earthen cups has found it difficult to keep up with its orders and has been obliged to refuse contracts for over two million cups. It is safe to say that the majority of the large turpentine operators in this country have given up the boxing system and will extract their turpentine by means of cups and gutters.

The economic saving of this new discovery is enormous. It not only causes a great increase in the amount of turpentine produced, but it is a most important factor in saving the pine forests of the United States. Every one knows that trees from which turpentine has been extracted by the old method—"boxed" timber it is called—soon die from the wounds inflicted on them. The cup and gutter system, on the other hand, is not fatal to the life of the tree, and does very little damage to the timber.

Mercury Vapor Lamp Proves a Success.

THE mercury vapor lamp invented by Peter Cooper Hewitt, son of ex-Mayor Hewitt, of New York City, which was described in *THE AMERICAN EXPORTER* several months ago, is reported by the *American Inventor* to be coming into popular use in the principal cities of the United States. It is appearing in New York factories and over in Boston it is rapidly coming into popular use. In Boston it is being used in warehouses, machine shops, factories, printing offices and places where great accuracy of sight is required. The lamp is much used by photographers, who say they can take pictures by it much more rapidly than they can by daylight. One of the advantages of the light is that it makes use of a current of high voltage, yet gives a steady illumination, where with another system the effect would be almost blinding. On account of its absence of red rays it is easy on the eyes and is well adapted to the use of those who work at night, provided their tasks have nothing to do with fine discriminations between colors.

Device Provides for Portable Ventilation.

IN no branch of Government service has the matter of ventilation been given such serious consideration as in the United States Navy. The construction of the modern vessel renders it extremely difficult to secure proper ventilation in some portions below the water line. Noticeable for its novelty among the various methods used to properly ventilate such places is an American invention called the portable ventilating set, consisting of a small exhauster directly connected to an enclosed electric motor. It is very light, moves a large body of air and is provided with handles for carrying from place to place, enabling the crew to work in any portion of the vessel with comfort.

Instruction in Machinery.—At a recent meeting of the Board of Trustees of the Iowa Agricultural College, located at Ames, Ia., U. S. A., a new branch of instruction was decided upon. It is a course of instruction in the building and operation of farm implements. It is to be conducted as a branch of the agronomy department of the division of agriculture, and will cover instruction in the use of all kinds of farm machinery and appliances. Professor Zintheo, who will fill the chair, has for the past year been in charge of a similar department in the North Dakota Agricultural College, the first of the agricultural colleges to introduce this class of work, and previous to engaging in the work of instruction Professor Zintheo was traveling for one of the prominent manufacturers.

Gain in Trade with Canada.—Commerce between Canada and the United States shows a rapid gain both in the figures of the year just ended and in those of the decennial period which ended with December 31, 1903. The year's commerce with Canada, as shown by the figures of the Department of Commerce and Labor through its Bureau of Statistics, will aggregate nearly \$200,000,000, against less than \$100,000,000 in 1893. Our exports to Canada, which in 1893 were \$57,000,000, in 1903 aggregated about \$130,000,000. Our total commerce with Canada has thus grown from \$91,000,000 in 1893 to approximately \$185,000,000 in 1903.

American Trade in Quebec.—Consul Charles Deal, at St. John's, Quebec, Dominion of Canada, reports as follows: "There is a marked increase in American goods kept by the merchants of St. John's, and they report an increasing demand for New York styles—the demand is for the latest styles and best qualities. Dealers sold \$12,000 worth of American agricultural implements this season."

Griffin Cleaner and Paste Combination

for Cleaning and Polishing Russet and Russia Leather Shoes and all Articles made of Russet and Russia Leather.

NOTE—Our Cleaner contains no Camphor.

Our Cleaner and Paste Combination for cleaning and polishing Russet and Russia Leather Shoes (and all articles made of Russet and Russia Leather) cannot be surpassed, if used according to directions. The Cleaner cleans and removes stains, and the paste produces a brilliant, durable waterproof polish, which is not sticky or gummy. We also make it in different colors, ox blood and brown.

Price per gross, large size.....\$14.00
Price per gross, small size..... 7.50
Discount, 10 per cent.

Our Parisian Dressing.

A Black Dressing for Ladies' Shoes. Is considered by good judges to be the best and nicest put-up 10-cent dressing on the market.



We guarantee it not to contain anything injurious to the leather. It contains oil which helps to keep the leather soft and pliable. Packed in one and three dozen boxes. Price, per gross, \$7.50. Discount, 10 per cent.

Griffin Sterling Combination

Our Sterling Combination for dressing and producing a gloss on shoes made of Box-Calf, Cordovan, Vici Kid, French Enamel and all fine dry black leathers. Cannot be surpassed if used according to directions. It is easily applied, polishes quickly and easily; its lustre is brilliant, durable and not sticky or gummy and will not crack or scale off. It keeps the finest of leather soft. We guarantee it not to injure the leather in the slightest degree, as it contains no acid or other injurious substances.

A circular in each package giving full directions.



Price per gross, large size.....\$15.00
Price per gross, small size..... 8.00
Discount, 10 per cent.

Griffin Russet Leather Polishing Paste.



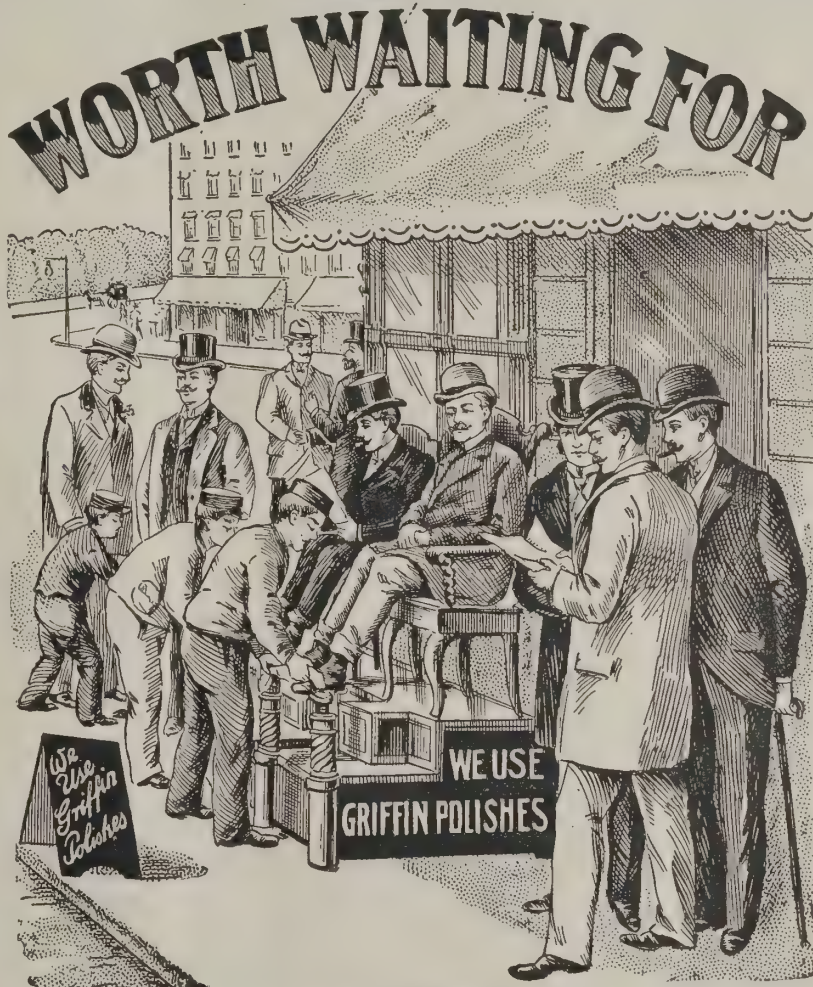
Our Russet Leather Paste for producing a high gloss on Russet and Brown Leather Shoes (and all articles made of Russet or Brown Leather) cannot be surpassed, if used according to directions. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and yet is not a varnish.

Excellent for vici kid.

We guarantee it not to injure the leather in the slightest degree, as it is free from acids, and will not soil the finest of fabrics.

If the shoe is dirty is should first be cleaned with Griffin Russet Leather Cleaner.

Price per gross, large size.....\$6.00
Price per gross, small size..... 3.50
Discount, 10 per cent.



Griffin Patent Leather Polishing Paste.



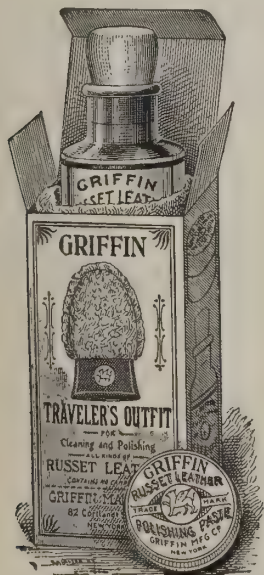
Our Patent Leather Paste for restoring the gloss to all articles made of Patent and Enamel Kid Leather cannot be surpassed. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and is not a varnish, as it leaves no coating.

We guarantee it not to injure the leather, as it is free from acids.

It is invaluable for brightening the saddle and blinders of harness, as the polish is waterproof.

Just the thing for manufacturers of harness to use, as it will prevent the Patent Leather parts from becoming dull.

Price per gross, large size.....\$6.00
Price per gross, small size..... 3.50
Discount, 10 per cent.



Griffin Russet Traveler's Outfit.

An excellent thing to take along when traveling. Contains a bottle of cleaner for cleaning and removing stains. A box of our polishing paste and a polishing mitten.

Price per gross.....\$18.00
Discount, 10 per cent.

GRIFFIN SNOW WHITE.



For cleaning and re-whitening white shoes made of canvas, suede and buckskin.

Price, per gross, \$10.00.
Discount, 10 per cent.

GRIFFIN

High-Grade Shoe Polishes.

GRIFFIN M'F'G CO.,

Manufacturing Chemists,

82 Cortlandt St.,

New York, U. S. A.



Griffin Sterling Traveler's Outfit.

For Box-Calf, Vici Kid, French Enamel and all dry Black Leathers. Put up in a carton. Contains a bottle of Sterling Dressing, a box of Polishing Paste and polishing mitten. Also suitable for Enamel and Patent Leather.

Price per gross.....\$18.00
Discount, 10 per cent.

New British Envoy Presents Credentials.

THE new British Ambassador, Sir Mortimer Durand, presented his credentials to the President of the United States at Washington last month. The addresses on the part of each are given below, as they both bristle with sincerity. Said the Ambassador:

"Mr. President, I have the honor to inform you that King Edward VII, my august sovereign, has directed me to present to you in person this letter accrediting me as his ambassador to the United States of America. His Majesty has further directed me to assure you of his earnest desire that the friendly relations which exist between the United States and Great Britain may be maintained and strengthened, and I have received His Majesty's command to keep this object constantly in view.

"I am deeply conscious, Mr. President, of the responsibility laid upon me, and I am well aware how hard it will be for me to prove worthy of the high mission with which I have been honored. I come to America for the first time with a warm admiration for, but without any personal knowledge of, the great nation over which you have been called to preside, and I feel my inexperience the more keenly because I succeed as British Ambassador here one who had passed a considerable part of his life in this country, whose sympathies with your people were therefore based upon a thorough understanding and, I may add, whose singular charm of character endeared him to all who knew him.

"I can only say, Mr. President, that, with God's help, I will do my best to carry out the duty intrusted to me. No duty could be more in accord with my wishes, and it will be a very real happiness when my work here comes to an end if I can feel that I have been able to help, however little, in bringing about an increase of the good-will between our two nations. I believe that upon that good-will depends in no small degree the welfare of the world."

In replying the President said:

"Mr. Ambassador, it affords me sincere gratification to receive from your hands the letter whereby His Majesty King Edward VII accredits you as his ambassador to the United States of America. Through you, the personal representative of your sovereign, I cordially reciprocate His Majesty's desire that friendship and good-will between our two countries shall be strengthened and perpetuated, and with the concurrent efforts of the American Government I doubt not that success will attend your endeavors to fulfil His Majesty's desire to this beneficial end.

"Following as you do, Mr. Ambassador, in the steps of one whose genial sympathy with our people and whose intimate knowledge of this country stood him in good stead, enabling him to gain the confidence and esteem of this Government and to win the affection of all with whom he was brought into association, I cannot doubt that you, being inspired by the same good purposes and animated by the same kindly feelings, will achieve no less than did your lamented predecessor and merit equally with him the high regard of this Government and of my countrymen. It is fitting that this should be, and that, mindful of the ties of kinship and speech, moved by like aspirations of progress in the paths of peace and sharing a reverential trust in the Almighty that guides our destinies, our two nations and peoples through their ministering agencies should strive to reach a harmonious accord in all that affects their common interests."

Faster Mails Between America and Europe.

FOLLOWING the information giving in our last issue about expediting the ocean mails between America and Europe, comes an announcement of great interest to the ocean-going public and to those interested in the transmission of trans-Atlantic mails which was made last month by the management of the International Mercantile Marine Company.

This announcement, which is the outcome of an agreement between the company and the United States Post-Office authorities, says that with the new year Plymouth will be made the first port of call for east-bound steamships of the American line. English mails will be landed there, after which the vessels will cross to Cherbourg, where the Continental mails will be hurried ashore. As Plymouth is 150 miles nearer New York than Southampton, this new route will insure the landing of mails in London about five hours earlier, and it will also expedite the delivery of the Continental mails by about twelve hours.

"Beginning with the departure of the steamship Philadelphia on January 2d," the announcement says, "all east-bound vessels of the American line will stop at Plymouth, England, and Cherbourg, France. This will facilitate the handling of the English and the Continental mails. After delivering the mails at Plymouth and Cherbourg the steamers will proceed to Southampton. Heretofore passengers for Paris and other Continental points have disembarked at Southampton and crossed the Channel. The new arrangement will be a great convenience for those who wish to go to the Continent and return from there without crossing to England. It will also enable the Continental mails to reach Paris twelve hours earlier than formerly.

"On the west-bound voyages the steamers will leave Southampton at noon, as heretofore, calling at Cherbourg the same afternoon, and will not stop at Plymouth.

"Plymouth is approximately 2,950 miles from Sandy Hook and is 150 miles nearer than Southampton. By discharging the mails at Plymouth about five hours will be gained in reaching London. Ordinarily, the steamers will reach

Plymouth during Friday night and the mail will be in London early Saturday morning in time for distribution on the first delivery.

"The United States postal authorities, working in conjunction with the officers of the International Mercantile Marine Company, have lately made several changes intended to facilitate the transmission of the trans-Atlantic mail. The first of these changes went into effect on November 1st, including the equipment of the White Star steamers with sea post-offices and the change of the American line sailing time from this port from Wednesday to Saturday morning. As a result, the heavy Saturday mails have been transmitted to Great Britain on the American line steamers, which carry postal clerks, enabling letters to be assorted en route.

"In this way mails have been delivered for the London Post-Office in time for distribution on Saturday instead of the following Monday, as formerly, and a large part of the British mail has gained thirty-six hours in point of delivery. With this arrangement the American line officials believe that they have the most efficient and convenient service that can be devised both for mails and passengers."

Some idea of the tremendous extent of the commercial importance of this ocean mail business may be gained from the fact that last year the foreign branch of the New York Post-Office handled over 100,000,000 pieces of mail. This does not include the "closed mails" which pass through the office in transit from such cities as Chicago, St. Louis and San Francisco and from foreign countries like Mexico, Japan and Australia. Altogether from 5,000 to 7,000 bags of mail leave New York for Europe every week, and when one considers that each bag contains from 4,000 to 5,000 letters and from 200 to 400 papers it will be seen that the international exchange of ideas foots up an enormous total of business in the course of a year.

The German parcels post, which enables people to send packages at so much a pound, is being used more than it has ever been used before. In sending parcels to other countries than Germany, the sender has to pay regular postal rates on the matter. Thus far the Post-Office has handled about 1,600 parcels in the German parcels post at a minimum rate of 12 cents a parcel, and about 3,500 registered parcels, at a minimum rate of 20 cents.

The weekly mail race ending December 19th was won by the Cunard line steamship Campania, which sailed from New York December 12 at 1.13 P. M. and arrived at Queenstown on the 19th at 11.33 P. M. Her letters were distributed by the first delivery that morning, while the mails of the steamship St. Louis, which left New York December 12th at 11.10 A. M., or two hours and three minutes before the Campania, were only delivered at 1.30 in the afternoon. Merchants engaged in foreign trade are the chief beneficiaries of this acceleration of the mails.

Move for New Treaty with Britain.

AT the home in Washington, U. S. A., of John W. Foster, formerly United States Secretary of State, there was held last month a meeting convened in the interests of a permanent arbitration treaty with Great Britain. The meeting was attended by men distinguished in statesmanship, in literature, in law and in the naval and military service of the nation. Regarding this meeting the Brooklyn *Eagle* makes the following interesting comment: "The object is a good one and should obtain from public opinion that measure of enthusiastic encouragement which alone can insure its success. Since the fortunate settlement of the Alaskan boundary dispute we have no pending difference of opinion with Great Britain which can in any way affect the cordiality of the relations now existing between the two nations; but it would be rash to say that no such differences will arise in the future. The proximity on our north of a great British dependency and the maintenance by Great Britain of colonial interests in the West Indies, on the South American mainland and in Central America involve so many possibilities of friction that it were well to guard against the dangerous results of that friction while there is yet time. We cannot think of any cause which would be likely to drive our cousins and ourselves to an open rupture; but the existence of a treaty making incumbent the reference of disagreements to the tribunal at The Hague or to some temporary court would be a perpetual guarantee against the progress of disputes to the stage where national sentiment forgets reason in bitterness and where bitterness engenders hate. We trust that the meeting of the National Arbitration Committee, to be held in Washington on January 12, 1904, will give tangible form to a project that is now but in the chrysalis stage."

Making Cigars to Music.—A cigar manufacturer in Philadelphia, U. S. A., has hit upon a new idea. He has had a piano placed in each of the two large rooms in which the cigars are made. Every day a musician comes to the factory and gives the employees a singing lesson. This plan has been found to be not only pleasant, but profitable. The employer has discovered that the girls make more cigars during the hour of singing than they make during any other hour of the day.

Sugar-Cane Machinery.—Readers of THE AMERICAN EXPORTER who are interested in sugar manufacturing will be interested in a new catalogue describing machinery for that purpose which will be sent to them on application by letter to the George L. Squier Manufacturing Company, Buffalo, U. S. A. The catalogue is published in Spanish and Portuguese.

Without doubt, America's most famous Bottled Beer ^{is} manufactured from the purest and best materials known to the Brewing Art. Absolutely no beer in the world its equal in merit.



Established in 1836.

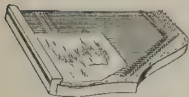
Correspondence Solicited from Responsible Merchants at All Points of the Globe.

Copies of Orders to Export Commission Merchants Should Be Mailed to the Company's Home Office, Columbus, Ohio, U. S. A.

MANUFACTURER OF

A black and white line drawing of a hand holding a stringed instrument, likely a lute or mandolin. The hand is positioned on the neck, with fingers resting on the strings. The instrument has a long neck with frets, a headstock with tuning pegs, and a pear-shaped body with a sound hole. The drawing is simple and stylized, with no shading.

Tremolo Flat
Mandolin.



Guitar-Zither.

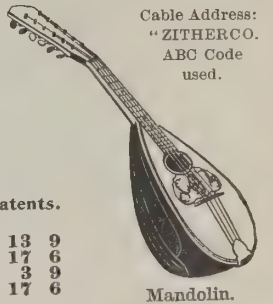
Special Offer for Export.—An assortment of 39 Instruments for **\$89.40** (£18 13 5) Net. F. O. B. New York, as follows: All protected by patents.

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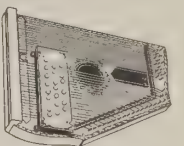
Total Net Price for 39 Instruments, f. o. b. New York

Approximate weights and measurements of assortment—Net, 112 lbs. (51 kilos); gross, 248 lbs. (113 kilos); cu. feet, 27 (¾ cu. meter).

We will furnish the complete assortment, or any portion of it, at the prices quoted above. Order through any reliable exporter.



Mandolin.



Mandolin Harp.

ST. PAUL, MINN., U. S. A.

Owners and Manufacturers of

The Bohn Dry Air Syphon System insures a low and uniform temperature, ranging from 38 to 48 degrees Fahrenheit. With our Enamel Lining, you need only to wipe the food compartments with a damp cloth to clean perfectly. The only absolutely sanitary refrigerator made.

Adopted and used exclusively by the Pullman Company for all of their Dining and Buffet Cars. Pennsylvania Lines, New York Central, Michigan Southern, Union Pacific, Canadian Pacific and all other railways throughout "the States" and Canada as well as by thousands of homes, hotels and clubs.

For Foreign Markets Only.

The prices here quoted includes boxing ready for transportation and delivered F. O. B. cars at New York City.

No. 2. Style "A." Panel Door. Price, \$23.00. Outside measurements (inches): Width, 38; depth, 21; height, 44. Weight, boxed, 278 pounds.

NOTE.—Orders received direct, or through export commission houses. When ordering through the latter, to avoid errors, please mail us a duplicate of order.

Our forty-page catalogue, illustrating and describing the various styles of White Enamel Refrigerators made by us, mailed postpaid.



No. 2. Style "A," Panel Door.



No. 5. Style "D." Upper Door Glass.

From Milk to Butter in ONE Minute.
NO CREAM SEPARATOR NECESSARY.
The use of the "One-Minute Churn" assures to private families **fresh, pure and wholesome butter at all seasons of the year**, doing away with tainted and poorly manufactured butter.

EXPORT ONLY.—Upon receipt of **Thirty Dollars (\$30.00)** in U. S. Gold, or its equivalent, we will box, ready for shipment abroad, one of each, seven in all, of our "One-Minute Churns" as follows:

Size A.	Industrial Miniature, capacity 1 quart
Size No. 1 (Special Household Size) "	1 gallon
Size No. 2	3 "
Size No. 3	5 "
Size No. 4	7 "
Size No. 5	9 "
Size No. 6	13 "

NOTE.—Size A is an Industrial Toy for Children.
Orders received direct or through export commission houses.
Specify "One-Minute Churns."

THE ONE-MINUTE CHURN CO.

I. M. MURPHY, President.

No. 9 Old Slip, New York, U. S. A.

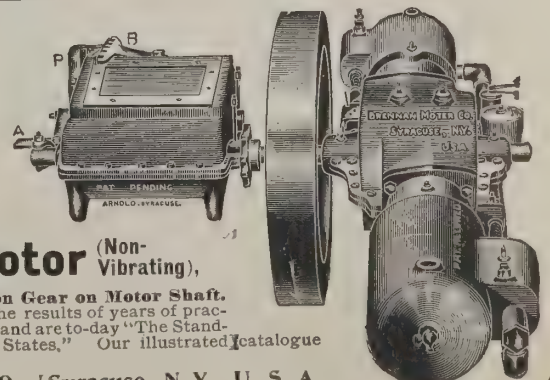
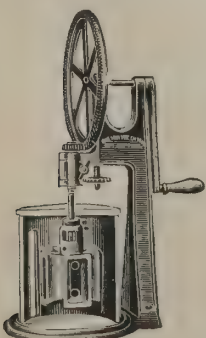
IS THE

Brennan Standard Gasoline Motor (Non-Vibrating),

With Transmission Gear on Motor Shaft.

Our Gasoline Motors are the results of years of practical experience with motors, and are to-day "The Standard" throughout the "The States." Our illustrated catalogue mailed postpaid.

BRENNAN MOTOR CO., [Syracuse, N. Y., U. S. A



American Trade with Egypt.

SOME months ago we printed extracts from the report of the United States Consul-General at Cairo regarding the possibilities of the hardware trade in Egypt for American manufacturers. The report went into the subject extensively, but only brief mention of it was made in THE AMERICAN EXPORTER, for it chiefly concerned the selling rather than the purchasing function of trade. W. T. Emmens, the correspondent of THE AMERICAN EXPORTER at Alexandria, Egypt, sends us the summary of the report, as reprinted in the *Egyptian Gazette*, and he makes some comments upon certain portions of it that are of interest to would-be purchasers of American goods in Egypt, as well as to the exporters of this country. Our correspondent sustains the contention of our Consul-General that the field is most promising for American manufacturers of hardware and other manufactures of iron and steel. Some extracts from the report with the comments of our correspondent are interesting, and no doubt Secretary Cortelyou, of the United States Department of Commerce and Labor, will take up the subject and add his influence to what those interested may do to remedy the troubles complained of.

According to the Consul-General the great difficulty in handling American goods in Egypt "is the time it takes to get consignments. It is unfortunate that goods cannot be held in stock in order to insure quick delivery. British and European firms send large stocks to their representatives in Alexandria and Cairo, and thus have the great advantage of giving prompt delivery."

As to this our correspondent at Alexandria gives names and specific instances, showing a delay of two months in the arrival of goods from the United States. Our correspondent writes:

"Some arrangement should be made and duly advertised with the Messageries Maritimes to take goods at New York for all the principal ports in the Mediterranean, India, China, Australia, etc., at fixed rates, to be carefully studied and expressly compiled for your export trade, accompanied by an authoritative estimate as to time of transit. This plan would probably involve transshipment at Marseilles, and this is a point which involves most careful packing—men being employed, if the goods are not to be damaged by rough handling. I believe my suggestion to be most valuable if your general export trade is to be developed as it may well be. At present goods are given over to the shipping agent, who naturally seeks the route by which he can most profit, irrespective of the fate of the goods. Another point is, that your manufacturers don't care to ship direct and despise small orders. To get orders through an American shipping firm is, of course, desirable, but it is short-sighted policy where competition exists. Experience proves that the rapid advance of the Italian and German imports is owing to the facilities they give in those countries for the execution of small direct orders from the manufacturers' agents in Egypt. I may add that I will receive any samples for exhibition or sale (if I deem it advisable), my charges being cut down to the lowest and remittance made immediately for all sales. Heavy machinery and metals are in the hands of large local firms who are well acquainted with American machinery, agricultural implements, etc."

In regard to the development of trade our correspondent, in commenting upon the report, declares that direct transportation facilities are the chief means of relief. He rather resents a comment about "bringing wide-awake American drummers (commercial travelers) to Egypt," for it is not a case where people are unwilling to buy, but rather a case of their inability to get what they know and want. It is quite probable that Secretary Cortelyou may be able, through the department of which he is the head, to suggest to the transportation companies such measures as may give them more freight to carry and American exporters more orders for their goods from Egypt. That country needs the goods we sell, its merchants want them, and all that stands in the way is proper and adequate transportation.

Features of Our Iron and Steel Exports.

THE recent announcement that a reduction of freight rates on iron and steel manufactures intended for exportation is being made by the railroads for the purpose of encouraging exports of American iron and steel manufactures lends interest to some figures compiled by the Department of Commerce and Labor regarding the commerce of the United States in iron and steel manufactures. These tables show that manufactures of iron and steel form the largest single item of our exports of manufactured articles, and have shown a more remarkable growth in exportation than perhaps any other great article in the large number which form the classification "manufactures." Beginning with \$52,144 in 1800, the growth was extremely slow during the first half of the century, being only \$1,953,702 in 1850. In 1860 the total was \$5,870,114; in 1870, \$13,483,163; in 1880, \$14,716,524; in 1890, \$25,542,208, and in 1900, \$121,913,548, the increase in the closing decade of the century being nearly four times as much as in the ninety years.

Considering the distribution of iron and steel to the various countries of the world, it may be said that Europe took in 1900 a larger total than any other of the grand divisions, the total value of iron and steel exports from the United States to Europe in that year being \$45,788,554.

Machinery forms by far the most important feature in the exports of iron and steel manufactures. The various classes of machinery which can be separately stated, such as locomotive engines, stationary engines, fire engines, electrical machinery, sewing machines, typewriters, shoe machinery, cash reg-

isters, laundry machinery, printing presses and pumping machinery, are shown in that manner. Aside from these, however, is a great group of machinery which is not stated in separate items, owing to its variety and the large number of different classes of machinery included. This single group of "machinery not separately classified" grew from \$10,000,000 in 1892 to over \$20,000,000 in 1902. The next largest item under the general classification of machinery is electrical machinery, which was only separately classified in 1898, amounting in that year to \$2,000,000, and in 1902 to nearly \$5,000,000.

Machinery alone formed in 1900 \$55,000,000 worth of the exports of iron and steel manufactures out of a grand total of \$121,913,548 of iron and steel manufactures exported in that year, or nearly one-half of the total. This statement of "machinery" does not include agricultural implements, bicycles, telegraph and telephone instruments, or other articles not exclusively or chiefly of iron and steel. Adding only these items of machinery included under iron and steel manufactures, it may be said that the exportations from the United States of machinery as a group amount to about \$75,000,000 annually.

Future of United States Department of Commerce.

GEORGE B. CORTELYOU, the head of the new United States Department of Commerce and Labor, issued his first annual report last month.

To people living in America it was one of the most interesting documents of the many that are presented to each new Congress. It covers a wide range of subjects and deals with diversified interests. Its whole tenor is of cooperation and helpfulness. Some of the subjects will be considered in subsequent issues of THE AMERICAN EXPORTER, but this concluding paragraph of Secretary Cortelyou's report is so characteristic of him and so true of the policy of the American Government that it cannot wait for presentation to our readers:

"The Department deals with the great concerns of commercial and industrial life. To be of service to these interests it must have their hearty cooperation and support. It must be a department of business. It must be progressive, but at the same time conservative. It must not deviate in its course from the pathway of justice, strict and impartial. It must be non-partisan in the highest and broadest sense. It must recognize no distinction, as between large and small interests, as between the affluent or powerful and the humblest citizen. If it attempts to occupy a field that properly belongs to private endeavor it will inevitably fail to realize the high hopes of its present well-wishers. It must adhere rigidly to the lines marked out since the foundation of the Government for federal agencies in executing the will of the people. If these general principles are made effective, if conservatism and impartiality, coupled with ever-increasing efficiency, mark its administration, I cannot but believe that this new Department will become a mighty influence for good in our commercial and industrial affairs."

Closer Trade Relations with Cuba.

RECIPROCITY with Cuba is now in force, the United States Congress having passed the bill putting it into effect last month. The treaty has been subject to considerable delay, but a great many interests were affected, and care had to be taken to do justice to all. The convention with Cuba provides that the products of Cuba shall be admitted into the United States at a reduction of 20 per cent. of the rates of duty now imposed, while United States products will be admitted to Cuba at a reduction of 25, 30 and 40 per cent., according to the articles, as enumerated in the treaty. Friends of the measure insist that this will give a much greater market to American products, and Treasury officials estimate that it will reduce the revenue of this Government by about \$7,000,000 a year. Whichever contention proves correct, the American nation has again fulfilled a pledge of aid and cooperation to a less fortunate neighbor.

Exports of Manufactured Articles.

OCTOBER is usually a dull month in the foreign trade, particularly in the exports of manufactures, but the official reports for that month last year were more than encouraging. The total exports of manufactures in October, as shown by the reports of the United States Department of Commerce and Labor, amount to \$37,558,675. This is a larger export than in any preceding October, except that of 1900, and even in that banner year of exports the total was less than \$100,000 above that of October, 1903. The increase over October, 1902, is about \$1,500,000; over October, 1901, \$3,000,000, and is more than double the total for October of 1893. Most of the principal articles of manufacture show a slight increase in October, 1903, compared with October, 1902. Agricultural implements show a gain of over \$40,000, compared with the same month of the preceding year.

Future Implement Exports.—The territory which our manufacturers have been supplying with implements and machines in the United States only represents a third or a fourth of the cultivated lands of the world. It is gratifying to note that our manufacturers are making good progress in building up their export trade, but enormous as our present exports may seem they represent only a drop in the bucket, as compared with the actual requirements of the farmers of foreign lands.—*Implement Age.*

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 1/4 cubic feet. This set represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/4 inches deep and 32 1/4 inches long. Made of selected quarter-sawn oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warerooms, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowl-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65

SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warerooms and on shipboard.

THOMAS K. OBER & CO. (INC.)

832 DREXEL
BUILDING,

Sole Export Agents of the Kitson Hydro-Carbon Heating and Incandescent Lighting Co.

PHILADELPHIA,
PA., U.S.A.

Keros Incandescent Oil Lamps.

Lamps of 600 Candlepower, 1,000 Candlepower and 2,000 Candlepower, for lighting Dwellings, Stores, Factories, Wharves, Streets, Warehouses, Parks, Private Grounds, Plantations, Mines, Railway Stations and Yards, Railway Excavations and Construction Work.

One Gallon of Kerosene Oil Gives a 1,000-Candlepower Light for Twenty-five Hours. Perfectly Safe. Does Not Increase the Insurance.

Send for Illustrated Catalogue and Price-List, giving full information.



No. 505.
Outside Arc
Lamp.
Outfit. with
Tank.
1,000 Candle-
power.



No. 116.
Portable
Lamp for
Household
use.
1,000 Candle-
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ADVERTISING
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MEMORANDUM BOOK

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CATALOGUE, ESTIMATES AND SPECIAL DESIGNS ON APPLICATION.

ADDRESS, EXPORT DEPT.

BALTIMORE BADGE & NOVELTY COMPANY.

BALTIMORE, MD., U.S.A.

American Official on Russia's Intentions.

SO much has been printed in the papers throughout the world that a recent interview with Col. William R. Holloway, who was United States Consul-General at St. Petersburg for six and a half years, and who has been transferred to the post of Consul-General at Halifax, will be found timely and interesting.

"There is no country which is more misunderstood and misrepresented at the present day than Russia," said Colonel Holloway. "It is partly their own fault, and the censorship they exercise is partly responsible. Russia is a quiet country for its size, and an American is always *persona grata* there. Yes, they know all about us. Count Cassini keeps them well advised. You must remember that Russia comprises one-sixth of all the land on the globe, and that it is not half so settled as the United States. It will take a thousand years to settle it."

"Do you think that Russia is going to evacuate Manchuria?" Mr. Holloway was asked.

"I don't think that Russia ever intended to occupy it," he answered. "They're not going to retain possession of it. Why should they be at the expense of maintaining a government in China? But they're going to protect their railroad. Russia has been impoverished by her crop failures, and her treasury is depleted. There are failures due to the bad roads, which can be traveled only in summer when they are in good condition, or in winter when they are hard. In the spring and fall they are impassable, so that even if one province has good crops and plenty of food, it cannot be transported to the next. There are not enough railroads. They have borrowed lots of money from France, but they have never defaulted on the interest of their debts."

"I don't know anything about Corea. That's politics, and I don't talk politics. Nobody out there seems to think that there is going to be any war. They are always talking about Russia having soldiers on the Indian border and saying that she is going to take Sweden. Russia would like to have Turkey, but England won't let her."

Mr. Holloway then spoke of the German business invasion of Russia, and compared the Kaiser to President Roosevelt.

"The business of Russia is in the hands of the German-speaking people," he said. "German has been the business language ever since the Empress Catharine's time, and Germany has the trade of Russia. The secret of it is that Germany gives credit. The United States demands 90 per cent. payment on the receipt of the bill of lading, and that makes them pay for goods sometimes two months before they are received. That is the greatest disadvantage to American trade with Russia. Germany is wonderfully prosperous. The Emperor of Germany has as much energy as President Roosevelt. They are a great deal alike. No one can estimate the possibilities of the country. The land is very rich, and there is a belt in the Caucasus below Moscow which is called the black belt because of the blackness of the soil. The climate is very much like that of the United States. Odessa is like Tennessee. The trouble is that the uneducated peasants are not intelligent farmers. Only about one in eight is educated."

Germany Is Recognizing Worth of Our Tools.

REPORTS from all quarters of the civilized world show that the appreciation of American tools and farming implements is being shown to a greater degree month by month; in fact, there is a steady increase in the export demand that must be very gratifying to our manufacturers. One of the recent reports comes from Hugo Muench, the United States Consul at Plauen, Germany. He says: "American tools are forcing recognition from the more progressive mechanics of this country, but if a cheap imitation can be had it is generally chosen. American farming implements—the best in the world—are but rarely encountered in these parts, and when found are usually discovered to be of an old, obsolete pattern. Only when the inexorable law of concentration shall have forced an abandonment of the present system of cultivating small holdings will the advantage of American labor-saving implements become so obvious as to displace the antiquated and cumbersome tools of former centuries. Viewing the general condition of our trade with this country, it is apparent that there is no valid reason to anticipate an early decline in its present vitality. The quality of American goods, despite occasional unfriendly criticism by the press, wins new markets year after year, and to the United States the Old World must continue to look mainly for its supply of the great staple products."

Russia at the American World's Fair.—According to advices received in this country Russia will have the most extensive exhibit at the coming American World's Fair which that country has ever made at a foreign exposition. The exhibit space will cover more than 750,000 square feet, which will be occupied by more than 2,500 individual exhibitors. Russia's national pavilion will be constructed on native soil and taken to the exhibition in sections and there erected by Russian carpenters.

Disc Wheels and Ventilators.—W. H. Carrier, M. E., has prepared an interesting pamphlet on "Heating and Ventilation of Factory Buildings," for the Buffalo Forge Company, Buffalo, N. Y., U. S. A. The company has also issued a neat catalogue on the subject of disc wheels. The readers of THE AMERICAN EXPORTER will be supplied with copies on making known their wants to the company.

Largest Printing Establishment in the World.

THE first year the United States Government occupied a building distinctively set apart for the conduct of its printing business the operating expenses amounted to something over \$500,000, writes J. Whelpley in *The Review of Reviews*. The cost of the public printing grew, therefore, in over sixty years, from about ten thousand to over a half a million a year, and has grown in the last forty years from the half-million mark to ten times that sum. Some idea of the growth of this institution is shown by the fact that when the first Government printing-office was established 60,000 square feet of floor space was sufficient, whereas at present 377,200 square feet is none too much to give all branches of the work ample quarters. The employees now number nearly 4,000, about one-third of whom are women. The entire establishment is conducted upon an enormous scale. As to the size and extent of the plant, the number of people employed and the material consumed, there is no printing-office in the world which approaches it in any of these particulars.

Germany and France are among the large countries which do their own printing. England does hers by contract. Some of Britain's colonies, however, do their own printing, Canada especially having a printing plant of considerable size and modern efficiency. New South Wales is another colony which also maintains a government printing-office. As stated, however, no public or private institution anywhere in the world approaches in size or facilities the one in Washington.

Here there are always a million and a half pounds of type in stock, and yet this is not considered sufficient, for at least 250 tons are tied up in live standing matter on the galleys. The payroll of the establishment approaches \$3,500,000. The proof paper alone consumed in the composing-room costs \$2,500 a year. Over 40,000 pounds of printing ink are used in twelve months, and ten tons of roller composition are necessary to keep the presses in good order.

The paper bill, of course, is the largest supply item, and amounts to over \$800,000 a year, which means a daily average of about fifteen tons of paper and cardboard. These figures, however, will convey but a vague impression to the mind of the layman. Only a practical printer can understand the amount of work which must be done to consume this enormous aggregate of material. It may be said, however, that during the past year 1,648,214 bound volumes figured as a formidable part of the output.

Standard Unit of Refrigeration.

PEOPLE almost everywhere on the face of the globe are now interested in refrigeration. Of course, comparatively few care about how it is measured. On a torrid day in tropical countries the question of measurement is subordinate to the consideration of securing all the coolness that can possibly be obtained. For measuring heat there has long been a standard, but in artificial refrigeration it seems to have been overlooked. At the recent annual meeting of the American Society of Mechanical Engineers considerable time was devoted to the subject. J. C. Bertsch, of Atlanta, U. S. A., read a paper, in which he gave his views as an expert in refrigeration. He called attention first to the extensive employment of mechanical refrigeration, and especially to the rapid increase in its use in the last few years. The writer said that sooner or later it will be applied to our dwellings and public halls, not only to replace the ice in the refrigerators, but to furnish also cooler and better air in the hot season of the year. There are thousands of refrigerating machines in use, and yet no standard unit of refrigeration has been established. The work accomplished in melting 2,000 pounds of ice at 32 degrees Fahr. in water at the same temperature has been fixed at 284,000 British thermal units, and that is all, and even this cannot be properly applied. Two tons of ice melting are roughly considered to equal one tone of ice-making, although the former requires 568,000 British thermal units to 420,000 for the latter. The Southern Ice Exchange, U. S. A., and the Ice Machine Builders' Association having appointed a committee for standardizing the proportions of the machinery and apparatus employed in refrigeration and to assist in establishing uniform regulations, the matter was brought before the society by Mr. Bertsch to invite cooperation. The conditions of mechanical refrigeration and the mode of computing the efficiencies were discussed in the paper, which concluded with a suggestion that a committee may be appointed, consisting of members of the society actually engaged in refrigerating engineering, to cooperate with the other bodies interested for the sole purpose of establishing a standard unit of refrigeration. The committee was appointed.

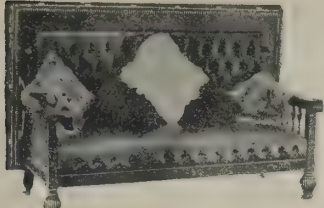
"International Exchange."—This is the title of a new book of value to persons engaged in international trade. It is a practical work on the terms, parts, operations and scope of international exchange, describing the methods of the foreign banking department and its administration by American bankers. The author is Anthony W. Margraff, manager of the National Bank of the Republic of the City of Chicago, U. S. A. Mr. Margraff has had an experience of quarter of a century in this field, and he goes into the subject thoroughly, giving in the volume of nearly 300 pages a mass of information, much of which has not hitherto been published, and which, in its entirety, makes it valuable for constant consultation by bankers and others engaged in transactions between foreign countries and the United States. Mr. Margraff's address is 1138 National Life Building, Chicago, U. S. A.

BALKE MANUFACTURING CO.,

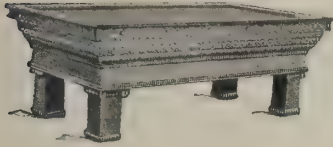
Patentees and Manufacturers of

**Balke Combination Davenport, Billiard and Pool Tables,
and Standard Tables.**

INCORPORATED \$100,000.



Style "A," as a Davenport.



Benedict Special Billiard Table.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note—The prices here quoted, U. S. Gold or its equivalent, are for **Foreign Markets Only**, and include boxing ready for steamer, delivered f. o. b. cars at New York City.

Style "A," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

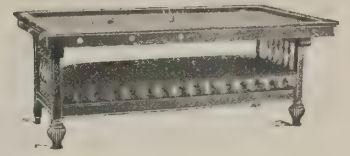
Style "A," converted into a Billiard or Pool Table, has a playing surface of $3\frac{1}{2} \times 7$ feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, **\$95.00**. Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: $4' \times 8' \times 6'$; $32'' \times 36'' \times 6'$.

Standard Billiard Tables.

"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate; imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4×8 feet. Price complete, **\$100.00**. Gross weight, 1,240 pounds; net weight 920 pounds. Size of boxes: $4'2'' \times 8'2'' \times 8'$; $4' \times 8'2'' \times 2'$.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, $3\frac{1}{2} \times 7$ feet. Price complete, **\$90.00**. Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: $4' \times 8' \times 8'$; $3'6'' \times 6' \times 2'$.

Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order. Our catalogue, illustrating and describing the various styles of Billiard and Pool Tables manufactured by us, mailed postpaid.



Style "A," converted into a Billiard Table.



"Den" Special Billiard Table.

BALKE MANUFACTURING CO., Grand Rapids, Mich., U. S. A.

CONTINENTAL CAR AND EQUIPMENT CO.

FOREIGN DEPARTMENT:

Whitehall Building, Battery Park, New York, U. S. A.

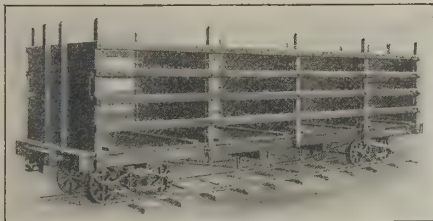
Cable Address: "CONEQUICO," New York.

MANUFACTURERS OF

Railway Freight, Plantation, Industrial and Mining Cars.



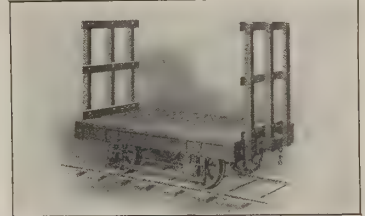
ALL-STEEL FLAT CAR.



CUBAN CANE CAR.



GONDOLA CAR.



PUER RICAN CANE CAR.

We also make Special Cars for all purposes, from designs furnished, or will furnish our own designs upon request.

FOR FOREIGN MARKETS.—Our Cars are taken apart and packed for shipment according to the best known methods.

Our Catalogue (English and Spanish), illustrating and describing the various styles of STANDARD CARS made by us, mailed postpaid.

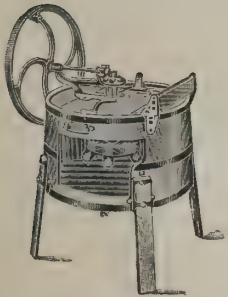
Please mention THE AMERICAN EXPORTER.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."

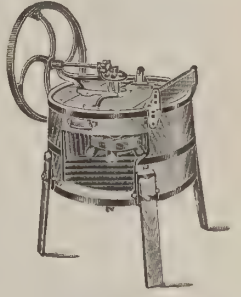
THE Guarantee

FOUR-STROKE ROTARY

Washing Machine



GUARANTEE WASHER.



GUARANTEE WASHER.

Just placed upon the foreign and home markets, combines the **Latest Improvements in High-Speed, Ball-Bearing Washing Machines** and will accomplish all that is claimed for or required of any washing machine, and more.

NOT A SPECULATION BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.

FOR TWENTY DOLLARS in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines**. (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds Order **FOUR NOW**. Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States.

NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.

The WATROUS SANITARY SPECIALTIES

The Watrous Combination Bath Fixture.

This fixture supplies hot or cold water or any desired mixture, by simply turning the handle to the right or left. To empty bathtub, simply lift the handle.

It is the only perfectly sanitary bath fixture made, as the tube is always filled with clean water direct from the supply instead of from the tub, and therefore impossible to become foul.

Has an independent supply passage direct to tub. **Can be attached to any bathtub.** Is constructed with ordinary Fuller balls. Is simple, cheap, durable and heavily nickel plated.

Upon receipt of price we will box, ready for steamer, and deliver F. O. B. cars New York, as follows:
One (1) Watrous Aquameter Water Closet, complete (Fig. "A 4.") as shown. Six (6) cubic feet. Weight, 100 pounds..... **\$30.00**
One (1) Combination Hot and Cold Water Bath Fixture, as shown. $\frac{3}{4}$ cubic feet. Weight, 17 pounds..... **\$15.00**

Our sanitary specialties are protected by U. S. and foreign patents. Our illustrated booklet mailed, postpaid, to any part of the world. Please mail us duplicate order when ordering through commission houses.

The Watrous Aquameter Water Closets.

Adopted by **The Pullman Company** and **all important Railway and Steamship Companies** in the United States.

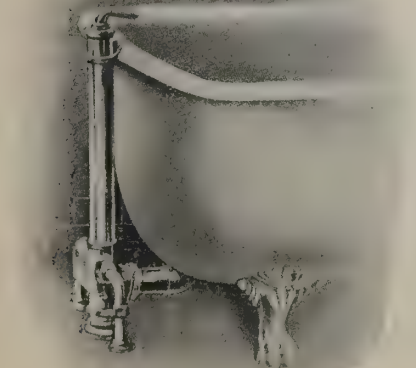
These closets have no equal for **Public Buildings, Residences, Steamships, Private and Parlor Cars.**

The closet shown operates perfectly with $\frac{1}{4}$ -inch or $\frac{3}{4}$ -inch pipe, according to pressure.

Connected direct to service pipe, without any tank. Uses from one to three gallons of water to each flush. Saves 50 per cent. in water bills. Noiseless and positive in action. Neat and durable. Successful everywhere. Fully guaranteed. Thousands in use everywhere.



Figure "A 4."
Watrous Aquameter
Water Closet.



Watrous Combination Hot and Cold Water Fixture.

THE WATROUS COMPANY, Manufacturers, CHICAGO, U. S. A.

Deriving Electric Power from Fuel.

AMERICAN inventive genius has at last bridged over a gulf that has been worrying electricians for many years, if the tests made last month in Newark, N. J., are to be accepted as conclusive. The inventor has experimented for years in an effort to generate electricity direct from fuel, and has constructed an apparatus which seems to have solved the perplexing problem. The inventor calls his machine a dynelectron.

The process of generating electricity consists of maintaining a fused electrolyte in an iron containing vessel or cell at approximately 390 degrees Fahrenheit and forcing through porous electrodes certain gases at a proper pressure and in proper proportions. When combined in the heated electrodes the slow oxidation of the gases gives off an electric current of great force.

Early in the experimental work the inventor built a 60-horse-power machine which performed all of the duties expected of it, but failed in one most essential particular. The porous electrodes disintegrated rapidly in the process of generation, and the inventor realized that in order to perfect the machine so that it would have a commercial value it would be necessary to devise an indestructible electrode. In this work alone he spent nearly two years before he found the secret.

If the inventor's hopes are realized he will succeed in eliminating the boiler steam engine and dynamo in the production of electricity. He says his generator will be the direct means of a vast saving in the production of light, heat and power. Speaking of his machine and the experimental tests the inventor says:

"The direct utilization of any fuel and the conservation of what has been waste energy is by this apparatus believed to be made certain. It is not an invention in the ordinary acceptance of that term, nor is it the result of accident or of having stumbled upon a hidden fact, but it is the solution of a problem carefully and patiently worked out along strictly scientific lines. To the manufacturing industries of the world it means a marvelous cheapening of the cost of operation and of production.

"The dynelectron illustrates an achievement in electro-chemistry. It is remarkable for its simplicity of design and construction, its durability and the economies it is intended to effect. While the size of the one exhibited is but a small unit of power, its work is such as to show that an electric current is generated. Tests made in every possible way have met every requirement from the viewpoint of the electrical expert. They have demonstrated an efficiency from which deductions made show that, as compared with the means now used to produce electric power and light, the present cost can be reduced three-fourths.

"The dynelectron may be described as an automatic plant consisting of a gas retort and cell, in which the electricity is generated and passes out through the transmitting wires. The expense of installing a commercial plant, it has been determined, will be about one-fourth of the first cost of the present plants of boiler, engine and dynamo. Still another important feature is that while several conversions are necessary with the methods now in use to produce electrical energy, only one is required with the dynelectron.

"The average efficiency of producing electricity with steam is 8½ per cent., as against 45 per cent. with the Reid process. Any fuel can be used—wood, gas, coal or oil. The cheaper the fuel the cheaper the cost of production with the dynelectron. Experts have conceded that the dynelectron gives out an electric current of high efficiency, that it can be transmitted to motors with constant and equal pressure, and can be utilized for any purpose for which electricity is intended or desired, whether it be for motive power, as an illuminant, or for heat."

Electric Motors Versus Steam Locomotives.

A WRITER in the New York *Herald* contributes an interesting chapter to contemporaneous literature upon the subject of electric traction replacing the monster steam locomotives of the present day. In several previous issues THE AMERICAN EXPORTER has informed its readers regarding the progress which is being made in this direction. The *Herald* writer repeats some things that we have said, but these extracts are interesting as showing the progressive condition of the country as we begin the new year:

"The steam locomotive is doomed! Throughout the length and breadth of the land the great steel network of rails will soon accommodate instead a newer, better and safer type of prime mover than the dangerous, high pressure, reciprocating monster with which we are all familiar. The electric locomotive will be the usurper of the time-honored and faithful steam engine, for it has been proved by exhaustive tests that the former mode of propulsion is in every way the more desirable, although the latter has admittedly served mankind well these fifty years. This gigantic revolution from steam to electricity on railroads will not take place in a day or a year or a decade, but those of our own generation may expect to live to see this remarkable transformation which is approaching so gradually, silently and systematically. They may further expect to journey from New York to Chicago (900 miles) drawn by a 150-ton electric unit in less time than is now consumed by the Twentieth-Century Limited, one of the fastest trains in America.

"The conversion of steam railroad systems to those employing electric traction had its first subtle beginnings when the mule-drawn street cars gave way to the trolley, and the rapid and economical features of the electric street railway over animal and other motive powers soon indicated that electricity was destined to become a mighty factor in future transportation.

"With improvements in electric generators, transmission lines and motors and the rapidity of their acceleration came the first important step in electric railroading when the little steam dummies were exchanged for electrically propelled cars on elevated railways. In this system the third rail is employed, and there are in different parts of the country electric surface railroads using the third rail for limited distances. With all these advances there is still a considerable gap to be bridged before the absolute adoption of electricity for long-distance traction is made, but just now another link has been added to the chain of progress, for the New York Central Railroad has placed a contract with the General Electric Company to equip its suburban lines out of New York City.

"To determine the power required to propel the trains an ingenious method was brought to bear, for the number, weights and numerous other variable elements would not lend themselves conveniently to solution by mathematical formulae, and so recourse was had to a dynamometer car, by means of which the drawbar pull of a train could be measured, and by testing a large number of trains of various weights, and finding the average power required for each train, the mean load of the total number of trains could easily be deduced.

"The dynamometer car is owned by the Illinois Central Railroad Company, together with the University of Illinois; it was coupled between the engine and the train in each test, and four runs for each type of train were made. The purpose of the dynamometer car, as has been indicated, is to measure the drawbar pull, and therefore the power required. The record thus obtained illustrates graphically the power required of and delivered by the modern steam engine and what the electric locomotive would have to compete with in order to hold its own. There are other questions involved in train operation of great importance when this change from steam to electricity is under consideration; one that may be referred to briefly is that of braking—that is, stopping a train—which is second only to that of acceleration or starting a train, for the drawbar pull during retardation is often as great as it is in acceleration. The braking effort of a train on its locomotive sometimes reaches as high as 11,000 pounds.

"Mr. Arnold, in summing up the weights of all the steam locomotives now in service on the New York Central Railroad, found that these could be supplanted by electric locomotives having a total weight of sixty-five tons each, if properly constructed. By a careful analysis of the choice of systems, discussion of plans and estimates, cost of installation, operating expenses and fixed charges per annum and many other details, Mr. Arnold ascertained the relative cost of steam and electricity."

The figures showed that there is only a slight saving in operating expenses in favor of electric traction, but its economical operation, its cleanliness and safety were sufficient to warrant its adoption, even if it were more expensive than steam. One of the advantages of electric traction, economically considered, is that the locomotives are made up of a number of units exactly fitting the requirements of the train to be hauled. In the steam system now employed an engine weighing 100 tons may be pressed into service, when one of 50 tons would suffice to propel the train.

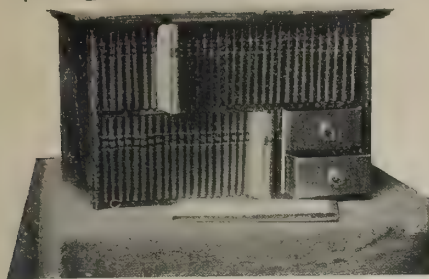
Largest Pump-Making Plant in the World.

A PUMP manufacturing plant which will be the largest in the United States, and probably in the world, is now under construction at Harrison, N. J. The new plant at Harrison will accommodate from 4,000 to 5,000 men and will cost in the neighborhood of \$2,000,000. It consists of a main machine shop over 1,000 feet long, an erecting shop 592 feet long, an erecting shop 210 feet in length and four galleries in height. The main foundry is 600 feet in length and the special foundry for small work 410 feet in length, with a building 200 by 60 feet in size for cleaning castings. The pattern building is four stories high and 550 feet long and is divided by fire walls into four sections. Electric power distribution is to be employed throughout, and the grounds will be illuminated by electric lights. The buildings will be connected by a complete system of railroad tracks entering the ends of the building and placing the works in direct communication with two railroad systems.

Advance in American Carriage Industry.—Foreign-built carriages, once so numerous in the most select circles of some Eastern American cities, are now rarely seen. The *Carriage Monthly* says American carriages are fully superior to the best made on the other side of the water. This applies to character and style of design, as well as to workmanship. While this may appear like an American boast, the correctness of the statement is vouched for by impartial British builders themselves, who are thoroughly familiar with American carriage-shop productions.

American Butter-Making Machinery.—United States Commercial Agent Felix S. S. Johnson, at Stanbridge, Canada, says: "Quebec and Ontario are the best butter-producing provinces in the Dominion of Canada. One can hardly travel in any direction without seeing a creamery or cheese factory. I find that separators from the United States can compete with those of Canadian make. The Canadians, as a rule, are anxious to try our machinery, which is superior to their own, as well as cheaper in price."

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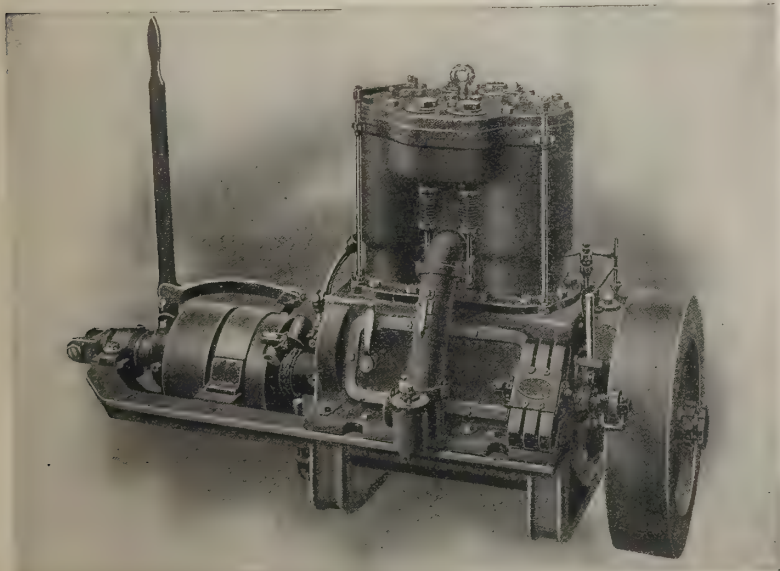
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Effects of the American Cotton Corner.

THE United States, in sentiment and in legislation, is growing more and more opposed to so-called "corners" in any sort of commodities. In our September issue we gave an account of the cornering of the American cotton market by a single man and described how millions of people were affected by his operations. The effects have by no means died away, and the mills in various parts of the world that have depended on American cotton at a reasonable price for their profitable existence have not yet recovered from the semi-panic into which they were thrown. It is fortunate that such speculators are rare, and that their opportunities are very few. The cotton crisis is a matter of international importance and the prevention of a repetition of it is of equal interest, so that the following excerpts from a report sent from London by United States Consul-General Evans are pertinent at this time:

"The minds of all who, looking beyond the present distress, are face to face with the fact that the future will see an annual recurrence of the depression are centered upon the topic of Empire-grown cotton. It is admittedly the only hope for the future, and it is satisfactory to be able to record progress in the enterprise. Sir Alfred Jones, who is president of the British Cotton Growing Association, has stated that the movement gives much promise in West Africa. Three hundred tons of cotton have already arrived from Lagos and large quantities are accumulating for shipment.

"It is expected that shortly something like 30,000 acres will be under cotton cultivation on the West African coast. Many tons of cottonseed have been distributed and now an extensive area is under cultivation. There are many thousands of acres in the vicinity of the newly constructed railway which are available for cotton growing, and this land will at no distant date be fields of growing cotton.

"During the American Civil War and also at the time of the notable cotton famine Lagos produced large quantities of cotton, and there are many parts of the colony where the residue of this cotton is growing wild and even so is described as of fine quality. In years to come Africa will be able to grow all the cotton which the English manufacturers require and still have a surplus for exportation."

Daniel J. Sully, the man who engineered the American cotton corner, has written an article on the subject, from which the following extracts will be found of interest as showing the importance of the staple in the world's markets:

"The present serious condition in the cotton markets of the world and the danger threatening the textile industry of the United States, of England, France, Germany, Russia, Switzerland and Spain can be traced to only one cause—the sterilization or impoverishment of the cotton seed. Serious as is the situation to-day, and high as prices are, the situation will be more serious and the prices higher and higher each year until measures are taken by which proper seed can be planted for the growth of the cotton crop.

"Paradoxical as it may seem, the curtailment of the cotton crop is a natural result of the growth of the cotton-seed industry. A quarter of a century ago the cotton seed was the bane of the cotton planter. He had great difficulty in getting rid of his surplus seed. It was burned, cast into the rivers, used to fill gullies and hollows and hauled away at no little expense. But since the discovery of the uses of cotton-seed oil, cotton-seed hulls and cotton-seed meal the demand for the seed has grown to great proportions. The southern portion of the United States is dotted with cotton-seed oil mills, and what was once regarded as refuse now brings nearly \$100,000,000 a year to that section of the country.

"This would be a magnificent asset were it not for the fact that the oil mills demand the heaviest and richest of the seed, leaving only the poorest for the planter to put back in the ground for the planting of his next crop. The fierceness of competition is such and the prices paid for seed are so large that within the last five or six years the planters have impoverished their seed supply to the utmost limit. Poor seed brings a poor cotton yield. Increased acreage is no remedy, even if it were possible under present conditions to extend the acreage much beyond its present limits. Thoughtful men see no prospect of a change in the immediate future. Surely none can be expected as long as the spinners have to scramble for cotton to keep their mills going and the cotton-seed mills pay top-notch prices for their supplies."

Mr. Sully quotes statistics to prove his contention, for which we have not the space. He continues: "Cotton is the most valuable money crop of the world to-day. It is used in more of the world's staples than any other of the earth's products. Its uses are constantly widening, and yet we are face to face with the condition of a constantly shortening crop. It is idle to charge the big advance in prices to manipulation of the market, to weather conditions in the cotton belt, to lack of moisture, lateness of planting or to any other of the stock causes. Every student of the cotton world who gives serious consideration to the subject will come back to the basic trouble of the impoverishment of the seed. This subject is of far greater importance than the average man realizes.

"You cannot look for any change in the United States until the danger from the impoverishment of the cotton seed is brought home to the planter. At present he is blind to this menace. The present crop will bring to him at least \$150,000,000 more than any other crop he ever raised. That would seem to prove that he is favored by fortune. The crop of next year perhaps will

bring even much greater returns. But there is an end to all things, and sooner or later it will be realized that what is now a godsend may bring about disaster.

"The world must have cotton. If it cannot get enough from America it will get it elsewhere. It is true all efforts to find cotton land equal to that of America have failed, some by reason of transportation difficulties and some from other causes, climatic and otherwise. Man is ingenious and persevering, however, and should a cotton famine extend over a period of ten or more years we will find a rival of the United States developing in some other land.

"In the interim America's manufacturing is growing, and it is confidently expected that before other countries can be made to produce cotton American mills will require practically all the raw material this country can produce under present methods. To-day the American cotton makes up nearly 85 per cent. of the cotton that is grown. Egypt grows a long staple cotton that is used in the finest of goods. India grows a short staple cotton that is used in the coarsest of goods. America grows the staple crop that is the medium between the Indian and the Egyptian, and is the great commercial necessity of the textile world. There is a distinct relationship between the American and the other crops, each having a bearing upon the other, and the Egyptian and the Indian planter shares relatively in whatever condition affects each distinct growth."

Decision in Venezuela Matter on February 1st.

HERBERT W. BOWEN, United States Minister to Venezuela, returned last month from The Hague Tribunal, where he appeared as the representative of the United States and Venezuela. "In all twelve countries were represented before The Hague Tribunal," said Mr. Bowen. "The question submitted to the tribunal was whether Great Britain, Germany and Italy are entitled, by reason of the war which they instituted against Venezuela, to have their claims against that country paid before other creditors are paid. The decision on that question, which will be forthcoming on February 1st, when the Tribunal meets to announce its decision, will be of great importance, inasmuch as it will establish a precedent that will indicate what methods creditor nations should pursue in the future in collecting claims."

Mr. Bowen said that in the course of the session the court heard every "possible and impossible" argument in favor of war and warlike methods for collecting national debts, and they also heard every enlightened and humane reason why creditors adopting peaceable methods should not be held to have forfeited their right to equality of treatment to bellicose creditors.

"If we were a little further advanced in civilization," said Mr. Bowen, "arbitrators would no doubt have been asked by all to decide that preferential treatment be given to nations that refrained from resorting to war and endeavored to collect their claims by diplomacy. But arbitration is comparatively a new institution, and until the Venezuelan case arose the nations did not regard The Hague Tribunal with great favor. It was even thought that some of the strongest nations were opposed to recognizing the Tribunal at all. However that may be, the most ardent supporters of arbitration are now quite unanimous in asserting that this Venezuelan case, in which no fewer than twelve nations are interested, has given The Hague Tribunal the recognition and respect it needed as the supreme international court of justice and peace."

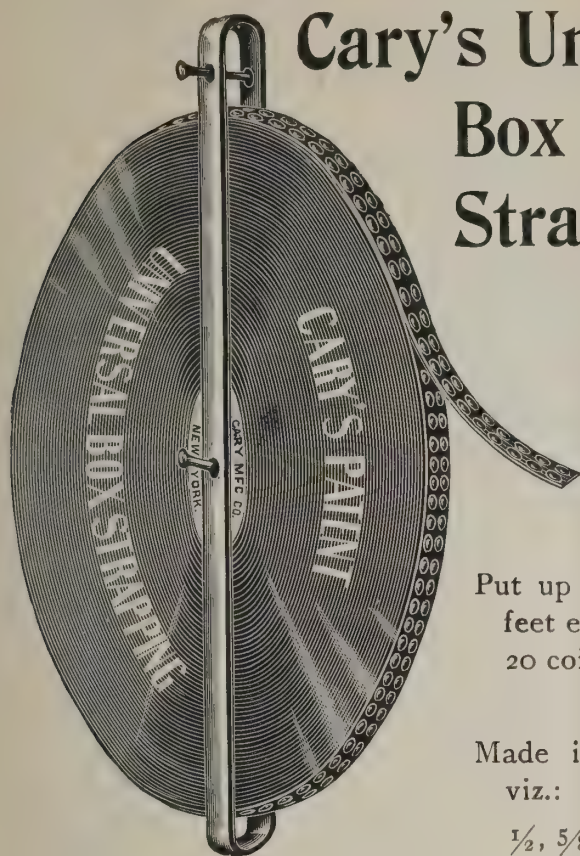
Turbine Tests for United States Navy.

THE United States Congress will have the turbine engine question to deal with among many other interesting matters that will come up during the present session. Sentiment among the members of both the Senate and House Naval Affairs committees is believed to be favorable to an appropriation of \$25,000 for experiments by the Navy Department with steam turbine engines. This appropriation has been asked for by Rear-Admiral C. W. Rae, chief of the Bureau of Steam Engineering, who believes that at least two small ships of the navy should be fitted with this type of propulsive machinery for experimental purposes. Rear-Admiral Melville, retired, who was Rear-Admiral Rae's predecessor, made a recommendation to this effect.

A board, of which Commander John R. Edwards and Alfred B. Canaga were members several weeks ago, rendered to Rear-Admiral Rae a report of an inspection they made of the turbine yacht *Revolution*, equipped with the Curtis type of turbine. They found this yacht very fast, especially for short distances. They made careful observation of her general features and of the engine installation. While the performance of the craft was creditable for her class, they reported that there was no means of telling how expensive her engine might be in steam consumption or how effective it might be, because there was no way of measuring these features in a turbine, as there is in a reciprocating engine.

The Board favors the installation of steam turbine machinery in some type of naval vessel. The Bureau of Steam Engineering and the Bureau of Construction and Repair are and have been for several months conferring as to the best methods of installation of machinery and the best type of hull for a turbine propelled scout ship or cruiser, should one be authorized.

Four Hundred Varieties of Apples.—The United States Agricultural Department has growing in its nursery at the Arlington farm no fewer than 400 varieties of apples. One of the studies of the department is that of growing fresh fruit with a view to its artificial storage.



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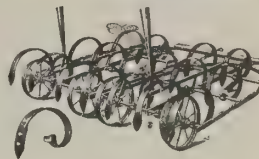
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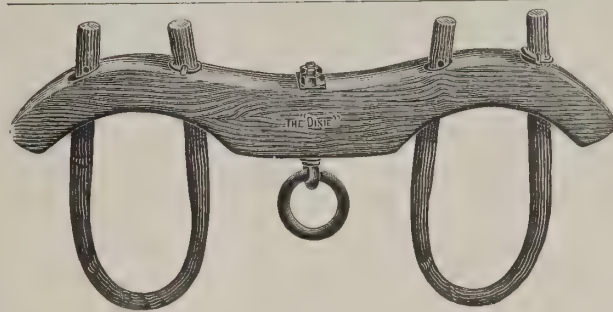
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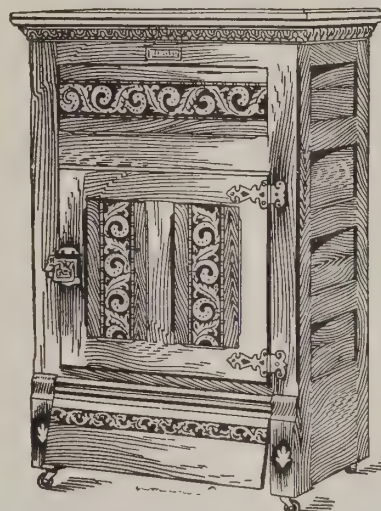


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Growing Practicability of Automobile Boats.

AUTOMOBILE launches seem to be the coming fad. Most people call them autoboots, and a writer in the Brooklyn *Eagle* gives some interesting information about them. Why they are called autoboots no one knows or cares, but that is the familiar term authorized by common usage. Small boats, ranging all the way from 20 to 100 feet in length, equipped with light yet powerful motors, drive these pleasure craft up and down the Hudson River, along the Sound, and elsewhere near New York City, among the Thousand Islands of the St. Lawrence River, bordering between the United States and Canada, at speeds varying from 14 to 30 miles an hour. And the best of it is, that no matter how high a speed is reached, there is no intrusive deputy to make arrests and no judge to impose fines, for all speeds are the "rule of the road" when it comes to automobiling on the water.

Power launches are by no means new things. For twenty-five years miniature steamboats have been used in America as tenders for yachts and to make short journeys. But they labored under the heavy handicap of being compelled to employ licensed engineers and firemen, and then they were weight-carriers, for the coal and water alone that was needed to run them frequently ran up to several tons.

A well-known firm of yacht architects built some of the first fast crafts of this kind, and they were pretty speedy boats for that day, but in 1885 the present type of motor, which is a development of a gas engine idea, came into use, and by substituting naphtha or gasoline for coal and water, the launch proper took its place among the delightful features of play life of the rich. Still these boats had little speed and were regarded more in the light of toys than as of practical utility. Then, by gradual development during the past ten years, the real automobile launch became a reality.

There are two distinct uses to which the automobile launch can be put. One is practical, forming a rapid and pleasant means of transportation. The second appeals to the sporting proclivities that are dormant in every man. It affords a splendid and most exciting means for racing on the inland waters of America and everywhere, in fact.

In this country autobooting has gone forward with leaps and bounds. The announcement that the American Power Boat Association will put up a racing trophy to be raced for the coming year has created keen interest. It will be called the American Power Boat Open Challenge Cup and will have a value of about \$500. This was settled at a recent meeting of the association which was held in New York City. The rules governing the rating and racing arrangements were also adopted and a committee was appointed to take care of the details of the race. This committee is composed of Henry J. Gielow, Atlantic Yacht Club; J. H. Wainwright, American Yacht Club; A. B. Cole and E. M. MacLellan, Manhasset Bay Yacht Club.

Another move which will help to popularize the automobile launch is the plan that is on foot to hold a national motor boat exposition from February 8th to February 20th in New York City. A large number of the 1,300 concerns which are interested in motor boats or their various parts will take part in this event and it should bring together the very best makes that this country and Europe can show.

On the New Jersey coast of the United States the oyster men are taking up autoboots, and a correspondent sends us the following about this new departure among men who are prone to adhere to time-honored customs: "Four boats of the oyster fleet have introduced gasoline as a propelling power in place of sails, now used on the other 400 schooners. It is thought that the use of gasoline will greatly increase the usefulness of the boats, as faster time and more trips to and from the oyster beds can be made. Much money is invested in the industry, and the owners of boats and oyster grounds are always on the lookout for a quicker and surer way of gathering the crops. The only drawback to the plan is the initial expense of fitting out the boats, but when this is done 150 gallons of gasoline will last during a week's work. Gasoline is worth about 10 cents a gallon, which would make the cost about \$15 a week. Gasoline is hailed with delight by the oystermen, as it does away with cold hands caused by excessive tugging and pulling at sail ropes."

New Mineral—Worth \$100,000,000 a Pound.

A SMALL glass phial about the size of a sulphur match and containing a whitish substance that looked more like common table salt than anything else came to America a month ago guarded more carefully than the big consignment of precious gems that traveled on the same ship. It was a little pinch of actinium, a substance even rarer and costlier than radium. It was sent over to Dr. George F. Kunz, the mineral and diamond expert of New York, whose experiments with radium, polonium, helium and kindred minerals are well known. It came from a man named Debierne, who discovered it while working in Paris in cooperation with the Curies, the discoverers of radium and polonium.

Actinium is priceless. Radium can be bought, though in a restricted market, for \$1,000,000 a pound. There is not a pound of actinium in the world, and if there was it would cost \$100,000,000. Nobody knows much about actinium. A faint idea of its power may be gained from the fact that its radio-activity is 10,000 times greater than the powerful uranium. Dr. Kunz has studied and experimented with the actinium sent him, but he is not yet ready to tell the public what he has learned. Last month Dr. Kunz

took the actinium before the Princeton Chemical Society and gave a demonstration of some of the wonders that can be performed by the salt. Scientists in New York who experimented with radium are waiting anxiously for the first exhibition of actinium here.

Actinium and radium are closely akin. They are both obtained from pitchblende, the refuse from uranium mines, as is also polonium, the first of these metals to be discovered. While the world was marveling at the discovery of radium Mme Curie and her husband were working to separate an elusive substance which they termed the "third element," coming after polonium and radium. They failed to isolate this substance, but M. Debierne succeeded in identifying this third element in pitchblende. He named it actinium, from the Greek word meaning ray. Long before his discovery the name actinium had been given by Phipson to a supposed metal.

The existence of such a metal had been suspected for fifty years, but the actinium finally discovered is far different from the metal Phipson supposed it was. He thought actinium was one of the elements of commercial zinc and that it might be separated.

Dr. Kunz says that actinium is a baffling study. "Actinium is one of an iron group of elements," said Dr. Kunz recently.

"It is somewhat near tutanium. It has been made in the form of oxide and chloride. While it hasn't the penetrative power of radium, it is remarkable from the fact that its emanations are very profuse for a time. Its radiations are invisible, except when placed near a diamond and some other stones, when it causes the stone to phosphoresce and makes a glow between itself and the stone. In the darkness actinium is only slightly luminous. In experiments that have been made nothing definite has been learned of its powers. It is supposed to lose its radiant energy after being exposed for a time and to regain its energy when shut up for a time. In my experiments I have not noticed the loss of energy. I exhibited the specimen before the Princeton Chemical Society and showed them its effect on diamonds."

Dr. Kunz said that it would be impossible to name a price for actinium. He said that it was one hundred times more rare than radium, and was accordingly more expensive to produce. Actinium may prove of value in the treatment of consumption. Actinic rays have already been used in the treatment of tuberculosis.

Possibilities of the Radium Industry.

AMERICAN interest in radium has been great and the magazines and newspapers have been filled with information about it. The following from Richard Guenther, the American Consul-General at Frankfort, Germany, tells something that may be new to many of our readers: "Notwithstanding the difficulty in its production (many tons of ore being required to produce 1 gram), a radium industry has already developed in Germany and France, and although 1 gram is sold at a little less than \$2,000 the manufacturers are said to have orders for several hundred grams. The demand for medical purposes exceeds the supply. Radium possesses all the important qualities of the Roentgen rays in addition to the invaluable property of being ready for use at any time and furnishes its rays without the employment of apparatus. It has been demonstrated that a small glass tube, not larger than a goose quill, containing a little more than a thousandth part of a gram, is as effective as an expensive and complicated electric apparatus for the treatment of cancer—surpassing the best effects of the Roentgen rays. The ease with which radium can be administered locally, as for instance in the nose or throat, is an invaluable advantage.

"The fact that radium exerts a very peculiar influence upon light-emitting bodies has given rise to the hope that it may eventually play an important rôle in the industry of life. A minute quantity of radium is sufficient to produce a strong light from a layer of zinc pyrites, and this light produces no heat, so that loss of energy is avoided. Radium rays, unfortunately, possess the dangerous property of injuring the human skin by producing severe burns."

Automobile Train for America's "Death Valley."

AN automobile train of motor or engine and several cars now being built in New York is designed to take the place and do the work of 1,200 mules, 240 drivers and save \$100,000 annually. For its use a macadam road 100 miles long will be laid over the shifting sands, through the rocky pass and along the mountain sides in the borax valley in southern California, better known as "Death Valley."

The engine is a movable power plant for generating and furnishing electricity. This engine will run along at the head of the train of cars and by means of a coupling tongue the current generated by the dynamo will be transmitted to the cars, each of which will be driven by two motors of its own. Each car weighs 9,000 pounds and is built to carry 15 tons. The total cost of train is to be \$30,000.

Automatic Machinery.—The F. B. Shuster Company, New Haven, U. S. A., has issued a new catalogue, giving particulars of machinery which it manufactures for the purpose of straightening, cutting and riveting, copies of which will be furnished to readers of THE AMERICAN EXPORTER who may be interested and apply to the company for the same. The catalogue is complete and comprehensive.

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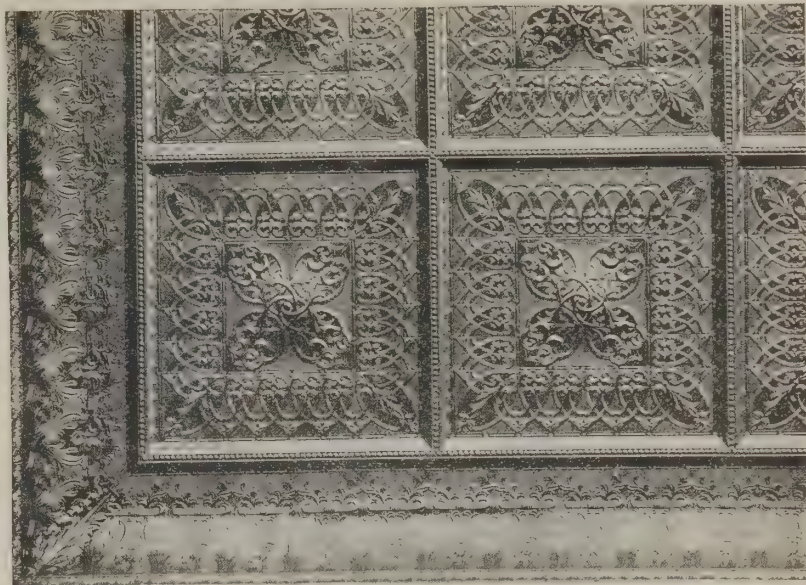
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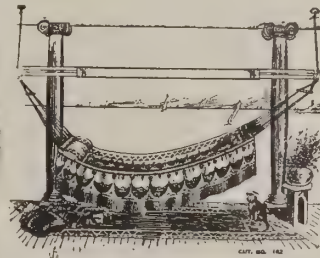


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Effect of Proposed New British Duties.

A LONDON correspondent of the *American Machinist* sends to that paper an interesting account of the effects upon the machinery export trade of America that are likely to ensue through the proposed new tariff conditions. The correspondent treats the matter with obvious fairness, and some extracts from it will interest purchasers of American goods everywhere. In fact, the entire letter would be interesting, but we have only space for the following extracts:

"Inquiries have been made throughout the British engineering and machinery trade with reference to the proposed duties on foreign imported manufactures. Out of a representative opinion only 4 per cent. of such firms are against the proposed duties, because they think that users of machinery in England would have to pay the duties, and that they would increase foreign and colonial competition. Of the remainder 42 per cent. believe that a 10 per cent. duty would not exclude machinery; 34 per cent. think that duties would do so, while 20 per cent. do not believe they would have any material effect. There is a very general view held that a 10 per cent. duty would not injure British exports of machinery and would slightly reduce imports.

"The contingency of the United States being excluded from the British market is not lost sight of, although it is thought that if that were so the States might turn their attention with extra energy to other places where they now compete on equal terms. It is conceded that, under new fiscal arrangements, many articles in the machinery and engineering section now imported from Germany and the United States would be made in Britain. Personally, and writing from my own knowledge of the South African and the general colonial markets, I do not believe that the preference at present accorded by South Africa will be of any material advantage. Any preferential duty less than 10 per cent. (and that is rather too low) will fail to give British exporters sufficient advantage to justify its imposition.

"It may be assumed that any tariff legislation in England would apply to the colonies, otherwise it would simply be useless and would lead to United States factories being established all over Canada. The proposed 10 per cent., it is said, would not exclude electrical machinery, but might exclude the importation of electrical manufactures and accessories. In another branch of the engineering trade the opinion is that wherever an article made abroad is better than the same article made in England, a 10 per cent. duty would not exclude it, nor would it probably diminish its sale here."

Study of American and British Methods.

CHARLES T. YERKES, the American who did wonders for London's underground transit facilities, has come out in an interview in the *New York World* with some interesting observations that are evidently sincere and that are unquestionably based on practical experience.

"So far as Englishmen are concerned," said Mr. Yerkes, "I want to tell you that when you meet with the better class Englishman, the well-born, the well-brought-up Englishmen, one who knows something of business and is unspoiled by flattery, you have met a man upon whom you can depend on for his friendship, his honesty and his bravery till the end. That sort of Englishman is just the best man on earth, and there are plenty of them in England.

"Life in England, all things considered, is pleasanter than life in America. They do not take things so seriously—small things, I mean—as they do in America. In America, and particularly in New York, you see thousands suffering from hustle out of place and overemphasized activity. Men rush out from their offices to luncheon, worry through that and rush back to their places of business as if the fate of the nation depended on their gaining a moment's time—and when they get back to their offices, stores and shops nine out of ten of them find they have been hustling so much that they have had no time to attend to any business in hand or bring it to hand if they lacked it.

"The Englishman is slower, steadier and surer, but altogether he is one of the best specimens of the genus homo the world has ever produced. I never met a better one. Another pleasant thing about life from the English point of view is the way they look upon sport and holidays over there. They have more holidays than we have here and they relax more for them. In the matter of sport, racing, cricket, rowing and all forms of physical competition are looked upon as national institutions that it is the duty of every Englishman to uphold and encourage.

"In America the better-class people regard all forms of sport, with the possible exception of football, as only of interest to 'sports' and half-grown boys. The Puritan strain in us makes us look with distrust upon even the best of men who race horses. But in England it is the great ambition of almost every wealthy man of station to own a horse that will win some of the classic events of the English turf, such as the Derby. And it is nothing unusual to see two cricket elevens composed of solid and corpulent middle-aged gentlemen heatedly and tirelessly playing a match game of innumerable runs and many hours' duration.

"America's progress is due to the fact that her men begin the battle of life early, when they are full of enthusiasm and energy and, when they are most adaptable to existing conditions—in their teens. A boy who goes into business at 17 or 19 has seven years, say, the start of a college man, and the college man must begin in a small position and at a boy's pay—begin where the boy began—and naturally this dissatisfies the college man. And a man dis-

satisfied is a man that is spoiled for the day's work. In this, of course, I am speaking of commercial and business life, along lines where experience and common sense are needed more than technical knowledge.

"Common sense is better than a high education, anyway. The man with common sense can always get an education, but the best education in the world doesn't bring you any more common sense than what you were born with. As for success. The component parts of success are a level head, an honest intention, industry and perseverance and—and this is important—just a dash of good luck."

Amusing Features of Emigrant Traffic.

THE keen competition for carrying the enormous number of emigrants from northern Europe to New York is not without its amusing features.

During the cholera outbreak of 1893 the Prussian Government persuaded the North German Lloyd and Hamburg-American lines to undertake to pass Russian emigrants through steam baths, disinfect their belongings and see the emigrants across the sea or return them to Russia or Austria, as the case might be.

Expecting to thus get a monopoly of the business, the companies spent millions for so-called "controlling stations" at eleven of the principal points on the eastern frontier, with baths, hospitals, steam-cleaning establishments, lodging barracks and offices. All emigrants are compelled to stop at such stations by the police, who have acquired rare skill in recognizing emigrants. Unless the emigrants could satisfy the German lines of their ability to pay their passage to the United States and get through Ellis Island they had to go home.

The rival companies never sent agents to Russia to drum up business, but a considerable portion of the emigrants turned up at the stations with prepaid tickets from America, which often read over non-German lines.

The difficulties on this ground finally led to contracts with the Red Star, Holland-America, White Star and American lines, the German companies agreeing to give the two former their overflow business in the flush season and recognize the White Star Line and American Line prepaid tickets.

Until the present time Russian and Austrian emigrants could pass through Saxony, where there were no control stations, but Saxony has just decided to imitate the Prussian example of sealing the eastern frontiers except through the North German Lloyd and Hamburg-American companies' stations. The closing of the hole in the German drag-net is occasioning caustic comment by the competing companies, which demand that the German governments administer the stations impartially and recognize the tickets of all companies. But this is not likely to be done, the governments being glad to get rid of the expense.

Extensive Dredging Operations by United States.

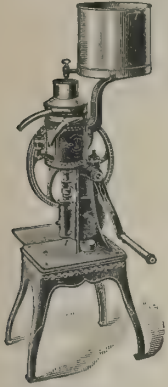
AN indication of the large amount of river and harbor improvement work now under way or contemplated by the United States Government is given by the fact that at present ten suction dredges are being built for use in various parts of the country. The contracts for building these vessels have been distributed among a number of builders, chiefly for the purpose of hastening their completion.

The mechanical equipment of the dredges for salt water service will include surface condenser outfits with Blake air-feed, fire pumps, etc. The dredges for fresh-water duty are provided with very large Blake air-pumps and condensers. The air-pumps are of a very novel arrangement, inasmuch as it is possible by the manipulation of valves and cocks provided for the purpose to cut each pump in half and run one side entirely independently of the other side. This practically provides a spare pump in each installation without the necessity of being overweighted with two duplicate machines, and at the same time secures the advantages of compound steam cylinders.

These dredges are the largest in capacity ever built, and are designed in each case for the special work which they will have to do. They are self-propelling, sea-going dredges and do not depend upon the assistance of tug-boats or other craft to move them around from point to point. Some of these vessels are fitted with immense bins in which the dredged material is deposited, and, when full, the vessel propels herself out to deep water, dumps the sand or mud and steams back to repeat the operation. Others are arranged for depositing the dredged material into large scows fastened alongside the vessel.

Slow Progress of Wireless Telegraphy.—THE AMERICAN EXPORTER, in an editorial last April, reviewed the difficulties that would be encountered in putting wireless telegraphy into practical commercial operation. At the beginning of the new year 1904 a writer in the *National Magazine* has this to say about the present situation: "When Marconi startled the world in December, 1902, with his amazing achievement of receiving the electric signals from Poldhu, England, at St. John's, Newfoundland, the utter and speedy overthrow of the cable companies was predicted on all sides in the first flush of the new marvel. But the anticipated progress not having been made by the wireless agency since then, and a host of other investigators having arisen to dispute Marconi's supremacy, the inevitable reaction has occurred, and now the opinion prevails that however successful wireless telegraphy may speedily prove itself to be, the displacement of the cables need not be expected for many years."

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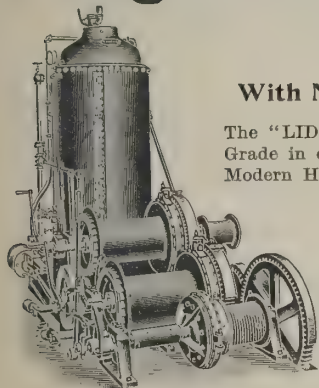
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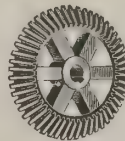


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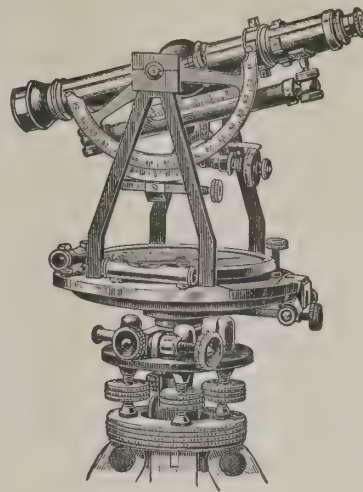
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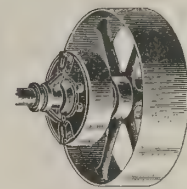
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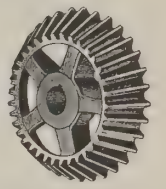
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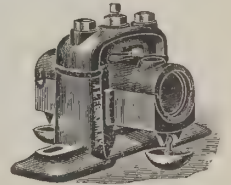
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Progress in American Business Methods.

NOT so many years ago purchasers of goods in the United States, as well as in other modern countries, were expected to take away with them the articles that they bought. Competition forced merchants to deliver goods, and manufacturers also have been coming into the custom of doing away with the f. o. b. (free on board). In other words, there is a growing disposition, both in the retail and wholesale American trade, to make a price to the buyer and deliver the goods to him without further trouble or expense. In the export trade this new principle is attended with some difficulties, but it will all be worked out eventually.

In New York City the delivery of goods can be called a science. We have in a previous issue shown the enormous amount of work that is done by the employees who look after the deliveries in the great stores. Even a needle is sometimes delivered, if the purchaser does not want to carry it away, and not so long ago a needle, price 1 cent, was delivered in the regular course of business by a big New York department store to a customer residing in a suburb ten miles away from the store. There was no profit in the transaction, as may readily be understood, nor was there any attempt on the part of the firm to secure an advertisement on account of it. The transaction was made in good faith on the part of the purchaser (a lady), who did not wish to carry the needle with her, but it is proper to say that she was a regular patron. From her account of it the disposition of the purchase was of the most ordinary nature. No remonstrance was made on account of price or distance, and the clerk who sold the needle made no remark to show that it was an unusual event. It was simply an incident in a marvelous system of delivery. Some of the New York stores deliver goods from anywhere within a radius of thirty miles of the city, and several of them have extensive stables in outlying sections, where their horses and wagons are housed to care for suburban deliveries, but none of them would make a regular practice of delivering needles. One store in New York expends over \$150,000 a year in the maintenance of its stables for the delivery of its goods to retail purchasers. Another store is reputed to spend even a larger sum, and there are several others that find it necessary to spend large sums to come somewhere near to their larger rivals in order to compete for the trade of the metropolis of the New World.

In the New York stores until recently there were cashgirls and cashboys, but now communication between the clerks and cashiers in the progressive ones is carried on through an automatic device, which is quicker and more certain. A modification of this method of communication is soon to be applied to the delivery business. A writer in the *National Magazine* has this to say about it: "And as surely as electric flyers will crowd out the trundling horse-omnibus, pneumatic tubes will supersede all sorts of delivery wagons. Fifty cents' worth of lima beans needed, telephone to grocery at 8 P. M., reply at 8.03, arrival of tube consignment at 8.05. Mistake? No canned things wanted on account of noxious preservatives? Prefer beans in five-pound bags? Return cans; arrival of second consignment at 8.09; transaction finished in less than ten minutes.

"Letters and newspapers will be forwarded in the same manner, and postage problems will be solved by telephone. Also the emergencies of over-size packages. The distribution office will send them either by district tubes or at consignees' option by special messenger. Automatic safeguards will prevent collisions, and after market hours delivery tubes will be used by circulating libraries, express offices, mechanics and artists. But tubes, as well as trolleys, will have to compete with steadily improving airships."

Only 10,000 Millionaires in the World.

IF there are 100,000 millionaires in the United States, as Senator Depew said at a recent dinner given by John D. Rockefeller, Jr., then both an official of a great commercial agency and the president of one of New York's richest banks are decidedly in error. Each places the number of millionaires in the entire world at 10,000. There are 7,000 in the United States; and 1,000 of these live in New York City, whether they pay taxes here or not. The financial Red Book, a most carefully compiled publication, gives the names of practically all the persons in the United States who are supposed to be worth more than \$300,000. And there are only 15,000 names on the list. No claim is made that the name of every person worth that amount or more is given, but the proportion of those left out is extremely small, for a most exhaustive investigation has been made.

"There may be a few more than 7,000 millionaires in the United States," said the official of the mercantile agency. "I doubt it, however. I also doubt if there are more than 1,000 millionaires in New York. It is absolutely impossible to tell accurately. It may seem strange that we should not be able to tell, especially when we are engaged in finding out how much a man is worth and giving such information to our subscribers. But in the last few years there has been a marked tendency among men of wealth to conceal the amount of their worldly possessions. The first incentive in this respect is the vulgar prominence given to the man that has lots of money.

"There are other reasons men have for suppressing knowledge of the amount of their wealth. Some wish to avoid heavy taxation and give false returns. Another man may have made his money in a business not commonly supposed to be especially lucrative, and he does not care to have his affluence

blazoned forth to arouse competition. So, while it is impossible for us to tell exactly how many millionaires there are, we would not take the number of those who are known to possess a thousand thousands at least and then multiply the number by ten. For that is what Senator Depew seems to have done in his anxiety to urge Mr. Rockefeller's young men to get rich."—*New York Press*.

Successful Men Who Are Not Rich.

THE ability to make money is undoubtedly the popular proof of success nowadays, but, nevertheless, there have been men who have put their ideals ahead of money-getting. Writing in *Everybody's Magazine*, Francis Bellamy says:

"There was Agassiz, who refused to lecture at \$500 a night because he was too busy to make money. Charles Sumner declined to lecture at any price, because, he said, as Senator all his time belonged to Massachusetts. Spurgeon refused to come to America to deliver fifty lectures at \$1,000 a night, saying he could do better; he could stay in London and try to save fifty souls. Emerson steadfastly declined to increase his income beyond \$1,200 because he wanted his time to think.

"Such stories of fine haughtiness did not seem quixotic to the young men in college thirty years ago. In spite of all the change that has taken place in the popular estimate of success, there is a great multitude of hardy souls who have refused to be swerved from their own ideals of a success which is unrelated to money.

"These people are all cherishing a certain ideal of excellence. We like to think of Mr. Howells, for instance, who has a standard of work infinitely more important to him than his now handsome remuneration. St. Gaudens got \$30,000 for his statue of General Sherman at the gate of Central Park in New York. But he was three years in making it, and he was a lifetime in making himself able to do it.

"The men who to-day dare to undertake pursuits where distinction of mind, or the glory of doing a fine thing, or personal influence in a wholesale direction, is the chief attraction, have certainly a true perspective on life. They have a correct world sense, at least. If they succeed they can't be cornered out of their resources. And it is a good deal to escape heartburn."

Railroad Cars That Are Traveling Bridges.

EVEN in this age of wonders no one would expect to experience the doubtful pleasure of a head-on railway collision without the usual horrors of a smash-up, yet that is put forward by an inventor for his most recent invention. A single track is used, on which railway cars are caused to travel. Two cars go head-on for each other, at a speed of twenty-five miles an hour. They approach within the danger limit, and suddenly the car having the right of way runs over the other and lands on the track again, where it continues in safety until it reaches its destination. The under car has proceeded as if nothing had happened.

The cars, although they run upon wheels, are really traveling bridges, with compartments for the accommodation of passengers. Over the framed structure of the cars thus constituted an arched track is carried, fastened to the car and serving the purpose of providing a roadbed for the oncoming car. The forward ends of the pilots of the superimposed tracks are provided with rollers and skids, which are so designed that one car shall mount the other without shock. The skids gently ride up the inclined track of the car ahead, and sufficiently elevate the rollers of the pilots to permit them to run upon the superimposed track without jar. The car itself follows with a motion equally as gentle. In actual practice cars of 11 feet 6 inches in length will be employed, the extreme length being 43 feet.—*New York Tribune*.

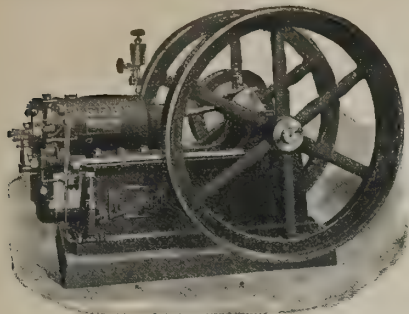
Technical Education in America and Abroad.

MR. LOUIS DUNCAN, in the *Engineering Magazine*, discusses a subject that is of growing international interest. It is that of technical education, which, he says, has taken individual shapes in Germany, America and England. In Germany it combines with the painstaking acquirement of knowledge, typical of German education, an idea of research; in America it is the old-fashioned general collegiate education modified by paying special attention to technical subjects, with a veneering of manual training; in England to-day it is chaotic, but with a tendency to keep technical education on a trade basis.

As far as facilities go, Germany depends upon State aid, which has been liberally supplied; America, to a large extent, upon personal contributions, while England is in the unfortunate position of having little State aid and no large benefactions.

The aim of technical education is to apply scientific discoveries to practical work. When any new discovery is made in science, there are two attitudes to be considered: The first is, how can I develop this discovery; the second is, how can I apply it. Germany, without neglecting the second attitude, has added to its technical instruction the first attitude—that is, the Germans combine research with application. In America it is only lately that technical education has concerned itself with research work.

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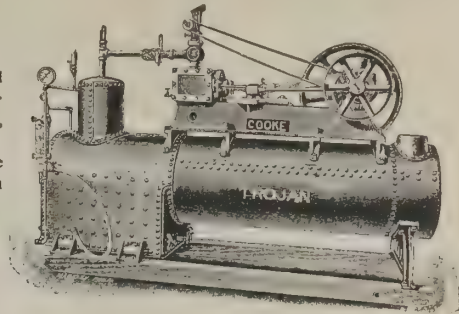
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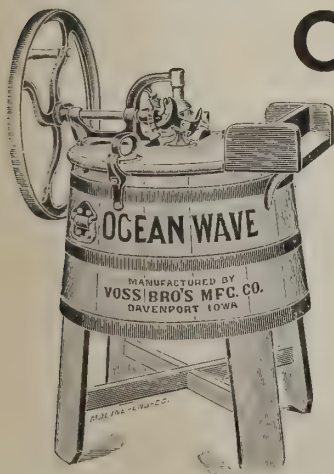
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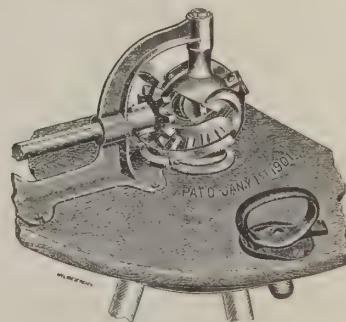
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GREETING TO WHOLE WORLD.

New Year Signals Are Sent by the United States All Around the Globe.

THE United States Naval Observatory sent telegraphic time signals around the globe to mark the beginning of the new year, 1904. At the time this issue of THE AMERICAN EXPORTER goes to press we have not learned the result of the experiment, but the following announcement showing the scope of the plans of these United States officials to send a New Year's greeting throughout the world will be read with interest:

"The signals were sent out last year for each of the four great standard time belts of the United States. This year it is proposed not only to secure a wide distribution of these new year signals throughout North and South America by the cooperation of the telegraph and cable companies, but also to send one or more of the four series of signals around the world and back to the room of the Naval Observatory where they started.

"The signals will begin at 11.55 P. M. and end at midnight, Eastern time. The same series will be sent out an hour later, ending at midnight, central standard time; again an hour later, ending at 2 A. M., for midnight of mountain standard time, and again an hour after that, ending at 3 A. M., for midnight of Pacific Coast standard time. During each of these four five-minute intervals the transmitting clock will send an electric impulse practically every second.

"On the world circuit the signals will go by land lines to Cape Canso, N. S., thence by cable to the Azores, Lisbon, Gibraltar, Malta, Alexandria and Port Said; by land to Suez, by cable to Aden and Bombay, by land to Madras, by cable to Penang, Singapore, Saigon, Hong Kong, Manila, Guam, Midway, Honolulu and San Francisco, and by land back to Washington. It is proposed to receive both the outgoing and incoming signals on the same chronograph at the Naval Observatory, and thus preserve a permanent graphic record of both on a single sheet of paper.

"It is suggested that, besides demonstrating the possibilities of practical astronomy and telegraphy, working together through international cooperation, benefits will result from the general attention that it will direct to the advantages of the use of accurate standard time throughout the world. The messages also will carry a New Year's greeting to the world."

American Enterprise in South Africa.

SOME interesting facts about American trade interests in South Africa are given in the recent elaborate and painstaking report made by Henry Birchenough, the special commissioner appointed by the British Board of Trade to investigate trade conditions and prospects in that region. The report is remarkable for his warm praise of American business methods as shown in that portion of the British Empire. As regards the prospects in the South African colonies, Mr. Birchenough's optimism is as frank as his admiration for the American way of doing things, and to aid the British merchant and manufacturer to take advantage of the one and compete with the other he furnishes a mass of information which cannot but be advantageous to Americans who have or contemplate trade relations with the Transvaal or the Orange River country. The report would fill several pages of THE AMERICAN EXPORTER, and we have room only for a few extracts:

"America is undoubtedly our most formidable rival present and future. The actual amount of her imports (into South Africa) of competitive articles is not very great—it is about one-half of her total importations—but it is growing rapidly both in volume and variety. It is impossible to visit ports, warehouses, stores or mines without being struck by the extraordinary vitality of American trade in South Africa. American manufacturers have confined their attention chiefly to the trades in which the natural resources of their country, or their experience at home of conditions similar to those which prevail in South Africa, or their well-known ingenuity and inventiveness, give them special advantages. This is why they have been able to dominate the trade in agricultural implements and in steel frame construction and to obtain so firm a hold upon all departments of mining machinery. Apart from foodstuffs and natural products in which there is rivalry with Australia and not with Great Britain, American competition is found to concentrate itself mainly upon a comparatively small number of very important articles, of which the following are the principal:

"Agricultural implements and appliances, mining machinery, electrical machinery and equipment in all its branches, steel frame construction, machine tools for workshops, small steel tools of all kinds, wire for fencing, etc.; cheap furniture known as 'knock-down' furniture, carts, carriages and vehicles of all kinds, and goods in which wood plays an important part. A few manufactures, such as boots and shoes, hats, lamps, stoves, canvas, watches and clocks, typewriters, cash registers, saddlery, etc."

The following analysis of American imports for the year 1902 is interesting: Machinery, £387,650; metals and manufactures of metal, £612,869; various manufactured articles, £1,145,232; foodstuffs, fodder, timber and natural products, £2,284,088; total, £4,429,839. Germany comes third on the list with a total of £1,789,352, and her ratio of increase is but little below America's.

Mr. Birchenough prefaces his enumeration of the reasons for the rapid

growth of American trade with the following, to his own countrymen: "The important point is that our manufacturers should become aware of the weak places in their organization and should study and appreciate those methods of their rivals which have brought them success and are worthy of imitation." He then takes off his hat to the Stars and Stripes as follows: "The ingenuity and inventiveness of the American people constitute an initial superiority. * * * The Americans are constantly introducing novelties to save labor and multiply conveniences, and with these they naturally tempt colonial buyers. * * * Another great advantage the Americans enjoy, though it can perhaps hardly be called a natural advantage, lies in the fact that their manufacturers have had in their own country to deal with conditions very similar to those which prevail in South Africa, so that they come into the market with an experience which the British have slowly to acquire. * * * Still the general impression one forms in South Africa is that foreigners, and especially Americans, owe much of their success to the extraordinary activity and alertness they show in the conduct of their business and the careful measures they take to retain and extend their connection. * * * They succeed in making their customers feel that buyers and sellers have common interests. * * * Instead of endeavoring to force the sale of goods they are in the habit of making they strive to find out what their customers really want and make it for them. * * * It has been said that the Americans are brought up with the idea that whatever is done can be better done, and it is just this attitude of mind which makes them such formidable competitors."

The commissioner preaches eloquently of the advantages of standard types in American machines over the British method of working to special gauge on each, and cites many instances of prompt replacing of broken parts on American-made machines and the vexatious delays arising when similar repairs were to be made on an English-built one. On this point he quotes a Government inspector of machinery in the Transvaal as saying: "The facility for effecting repairs induces people to purchase American-built machinery when otherwise they would prefer English"

Coming down to smaller articles of trade Mr. Birchenough admits that "in looking over a merchant's stock one quickly becomes able to tell which are American and which are British goods by the superior smartness and neatness of the former." He then proceeds to read his countrymen a lecture on the advantage of careful packing, a matter which is of especial weight with the South African buyer, and adds: "At Port Elizabeth I was shown a mixed American cargo of over 5,000 tons, in which there was hardly a single breakage discovered, although a considerable portion consisted of very fragile goods."

Of the many other points of interest the following is one: "At the present time there is extraordinary activity in the building trade in all the South African colonies, and the demand for building material of all kinds is enormous. Of actual materials Great Britain cannot expect to provide more than a portion. A most important and comparatively new development of the building trade in South Africa which calls for immediate attention of British manufacturers is steel skeleton frame construction. This was introduced by an American firm in the first instance in the erection of the type of tall buildings known in America as 'skyscrapers,' but it seems likely to extend to other classes of buildings and to become a very important branch of trade. The Americans have undoubtedly exhibited great enterprise. When they appeared on the scene they showed drawings and photographs, and offered to make detailed plans and to calculate all strains for architects and to quote a price per ton, inclusive of the cost of erection. The offer of all these facilities was naturally extremely tempting, and as there was no effective competition they for a time carried all before them. Several most important buildings of this character have been constructed or are under contract at Cape Town and still more at Johannesburg."

American Goods Appreciated in Italy.

DESPITE the fact that more liberal credits are given by the merchants of other countries, Pietro Cuneo, the United States Consul at Turin, reports that, despite lack of good transportation facilities, there is an increased demand for American products in Italy. Mr. Cuneo says in part: "Americans have the monopoly of the trade here in sewing machines, typewriters and cash registers. I am often agreeably surprised to find many other American products in this market, such as radiators, printing presses, bicycles, stoves, cooking utensils, canned meats and other articles of food. I have noticed considerable American machinery in this city, and dealers speak in terms of praise thereof, but complain of the transportation cost to get it to this market. A dealer showed me samples of American cut goods for the manufacture of shoes, and told me that considerable quantities of such goods are imported into Turin."

Agricultural Schools in Spain.—United States Vice-Consul Adolphe Danziger, writing from Madrid, says that the Government of Spain is to open fourteen agricultural schools in various parts of the peninsula. They are to be practical means of educating farmers not only in regard to the crops raised, but in the use of agricultural machinery and implements. While they will be governmental institutions, the contracts to equip them will be let to private parties and bids are soon to be asked for. It is probable that American machinery will be selected.

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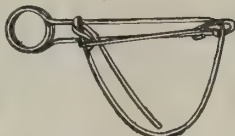
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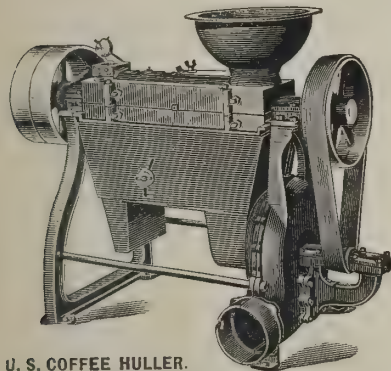
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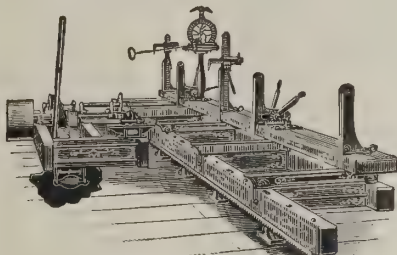


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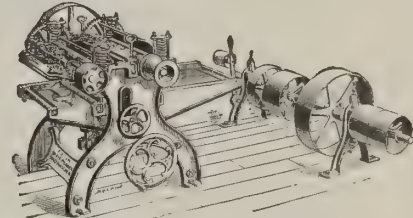


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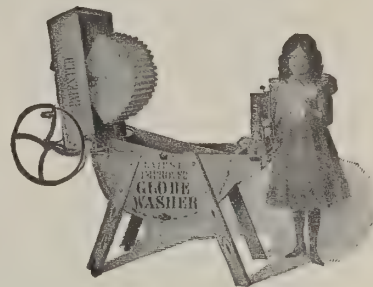
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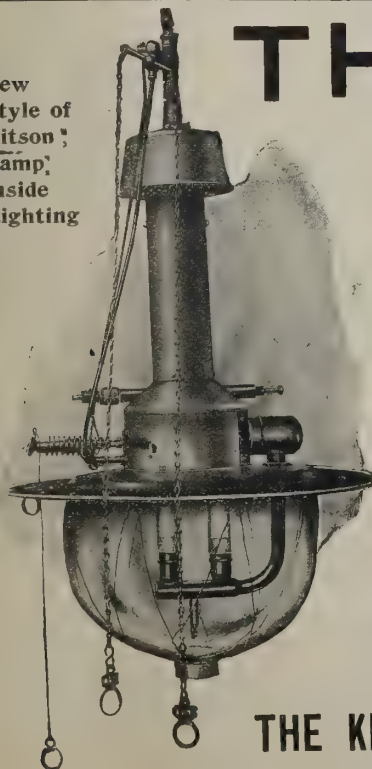
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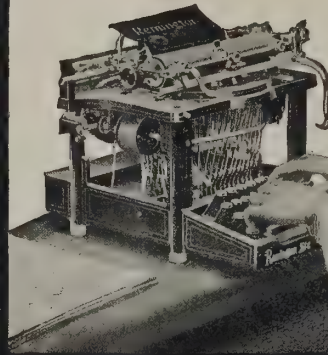
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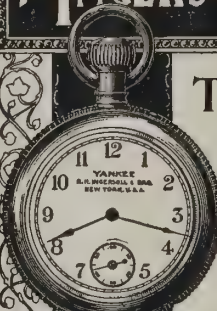
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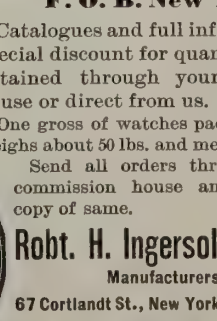
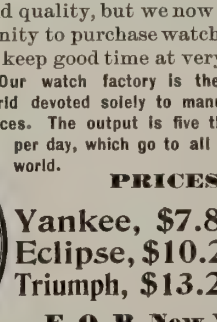
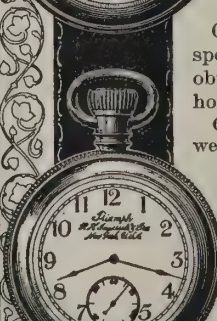
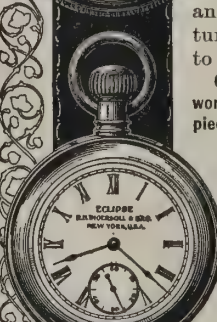
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Manufacturers,

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ESTABLISHED 1866.

PAINTS and VARNISHES OF ALL DESCRIPTIONS

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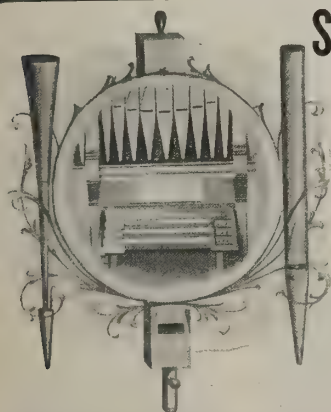


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Manufacturers and Exporters of

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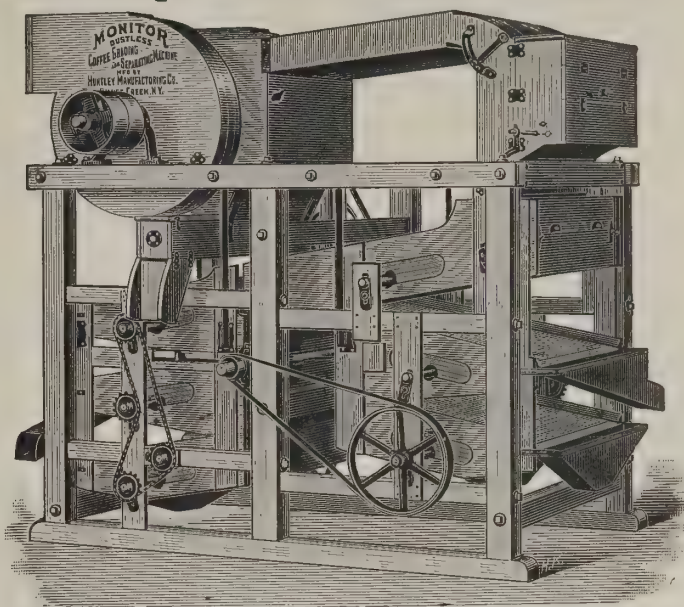
Our Fans are used in all parts of the world. Our experience with foreign requirements enables us to meet all conditions, especially in respect to special insulation. Other strong points are, artistic design, high finish, economy in operation and blade-carrying power.

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CEILING, DESK and BRACKET types, for all direct-current circuits.

New twelve-page circular of our Protected Type Dynamos and Motors ready for distribution. Yours for the asking.

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The Perfect Coffee Classifier.**MONITOR COFFEE SEPARATOR AND GRADER.**

This machine removes all foul material and fragments, makes clean separations and grades perfectly in five sizes: Large, medium and small flats, large and small peaberry.

Made in five sizes, and capacities from 6 to 30 bags per hour.

Monitor Rice Separators are used more extensively in the rice industry than any other make of machine.

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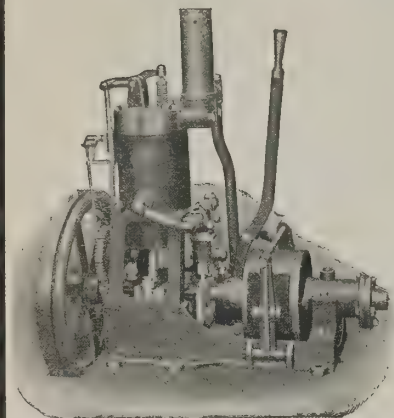
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High speed launch engines—
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Heavy duty engines for
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Over 5,000 Hercules Engines Sold

We want responsible agents in
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"St. Louis A. B. C. Bohemian."

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Brewed and bottled expressly
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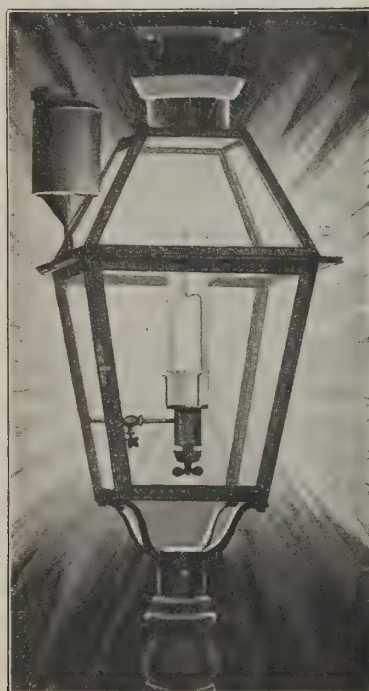
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"SUN" Gasoline (Petrol)
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Every Light Is a Complete
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Magnificent Illumination.

Economical! Safe! Powerful! Convenient!
Fully protected by Original Patents.
Beware of Infringements and Cheap Imitations!

Ten times more light than Electric
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Have them in all styles from
100 CANDLE-POWER UP.

Also Beautiful "Sun" Incandescent
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MOST SUITABLE FOR FOREIGN TRADE.

Every important city uses our street
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Write for Catalogue and Export Prices.

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(Established 1875.)

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TARR & WONSON'S
COPPER PAINT,

for Wooden Vessels' Bottoms,
prevents boring of worms and all marine growth.

Awarded Eight Highest
Medals:

Gold, Silver
and Bronze.



Excels on
Every Point.

Cheapest to Use
in the End.

THE WORLD'S STANDARD FOR FORTY YEARS.

RACING COMPOUND for Wooden Yachts' Bottoms,
Bright and Smooth.

Manufactured Only by TARR & WONSON, Limited,
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Irving's Wizard Top
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A Top within a Top. Made of STEEL, nickel-plated. Is
a veritable Rotary Engine, gyrating in contrary di-
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is 8 minutes. Performs over 40 tricks. A child can spin it in 3 sec-
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slack wire. Has no equal in the novelty world. Sells at
sight. Over 500,000 sold in 17 months in the United States. The ac-
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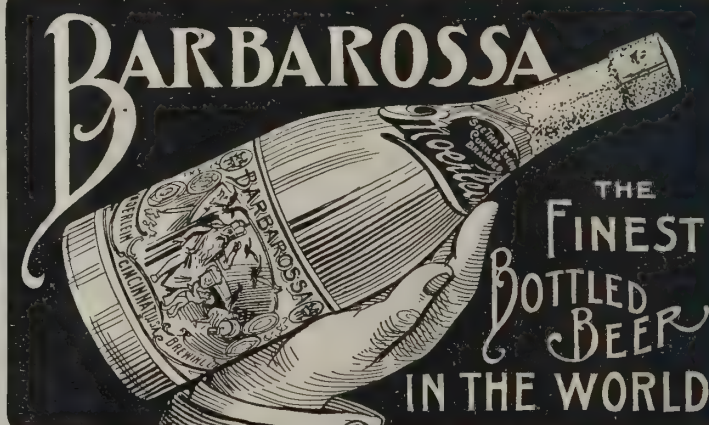
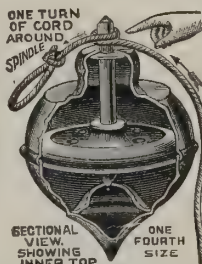
See Special Export Proposition.



\$18.00. Upon receipt of Eighteen Dollars in U. S. gold, or its equivalent, we will
box ready for steamer, f. o. b. cars New York, one (1) gross of the
Tops, with Trick Outfits complete. Size of case, 24x12x11 in.; gross weight, 54 lbs.

Prompt Deliveries and Entire Satisfaction Guaranteed. ORDER NOW!

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Moerlein's Beers
STANDARD
OF PURITY AND WHOLESOMENESS.
THE CHRISTIAN MOERLEIN BREWING CO.
CINCINNATI, OHIO.

HAVE YOU SEEN THE

**Schroeder
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It is the most perfect and successful Rotary Washer on the market. The tub is made of red Louisiana cypress, which will not fall apart. All castings are finished with rust-proof aluminum paint; all iron parts coming in contact with the clothes are heavily galvanized. We also make other washers. For particulars address

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For Engine Builders, Gas and Steam Fitters.

WRITE FOR CATALOGUE.

"NEW JERSEY" COPPER PAINT**LEADS THEM ALL,**

So Our Testimonials Say.

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition
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For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

A PAINT THAT PROTECTS.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD, Master Schooner "Florence Shay."

**Shoe - Upper Leathers
OF ALL KINDS.**

The American Shoe Manufacturers' Export Co. begs to announce that its LEATHER DEPARTMENT, which is under the direction of experts, can supply all kinds of Leather in large or small quantities at short notice. Skins carefully selected and each one inspected before shipment and securely baled, boxed or otherwise packed strictly in conformity with instructions.

SEND US SAMPLES OF WHAT YOU USE AND LET US
QUOTE PRICES.**Our Shoes Are Famed All Over the World.**

We make more than 500 different kinds for men, women and children—from the cheapest to the best. We also manufacture Shoe Uppers, that is the shoe complete without soles or heels. Send for samples.

Our DIAMOND BRAND SHOE DRESSINGS are the best on the market, but priced lower than other makes.

American Shoe Manufacturers' Export Co.,

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AGENTS WANTED EVERYWHERE FOR

THE BEST LIGHT**The Cheapest and Strongest
Light on Earth.**

Makes and burns its own gas. It is portable; hang or set it anywhere. Requires no pipes, wires or gas machine.

A Safe, Pure White, Powerful, Steady Light. Permitted by Fire Insurance Underwriters.

No wicks to trim; no smoke or smell.

**SUPERIOR TO ELECTRICITY
OR ACETYLENE
AND CHEAPER THAN KEROSENE.**

Saving effected by its use quickly pays for it. Over one hundred styles of fixtures for indoor and outdoor use. This is the Pioneer Incandescent Vapor Gas Lamp. It is perfect. Beware of imitations.

Write for Catalogue, Lists and Discounts. Orders received direct or through exporting houses.

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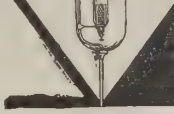
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Codes used: Liebers, A B C, 4th Ed., W. U.

Tel. Co. and Our Own.

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SUSPENDERS.**

The Great Suspender Success. Ask any American.

Wears Well. Sells Easy.

Guaranteed.

All Breaks Made Good.

Sample pair, postpaid, 50c.

Thirty dozen or more, \$4.38.

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Net spot cash;

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Write for Special Discount Sheet. Showcards in Every Box.**THE C. A. EDGARTON MFG. CO.,**

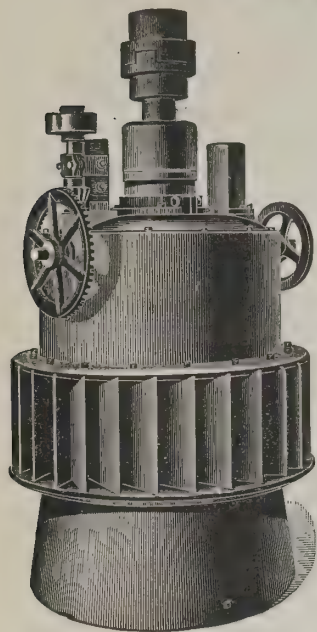
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The "New American"

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Why?



Strength, durability and interchangeable parts reduce repairs to a minimum.

Great power for the diameter.
Economy in use of water.

Vertical or Horizontal Installations to meet requirements.

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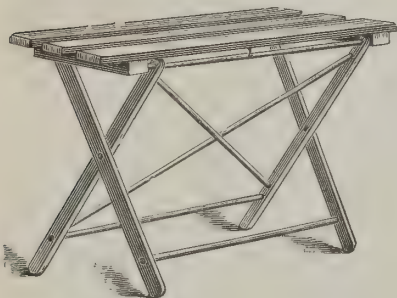
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IRON WORKS CO.,**
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C. W. H. MOULTON & Co.

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Manufacturers and Exporters of

LADDERS.



Patent Extension Ladders,
Full line of Step Ladders,
All kinds of Single Ladders,
Lawn Settees,

Ironing Tables,
Wash Benches,
Clothes Dryers,

PAINTERS' STAGING OUTFITS, PATENT FIRE LADDERS.

Orders filled through commission houses. Correspondence solicited.
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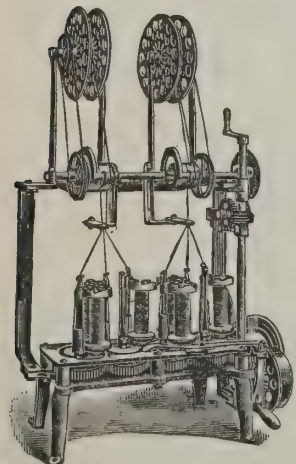
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MANUFACTURERS AND
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Braiding Machinery

For all styles and kinds of Braided Fabrics.
Round and Flat Braids, Solid Sash and
Curtain Cords, Shoe and Corset Laces,
Banding, Candle Wicking, Etc. Prices,

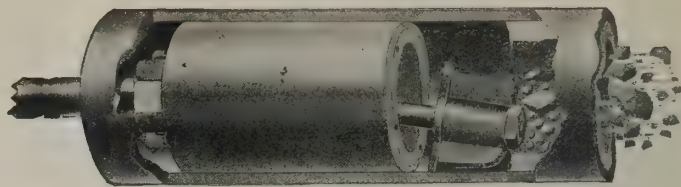
\$10.00 to \$160.00



Also a full line of Machinery for Insulating Electrical Wires and
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ORDERS FILLED THROUGH COMMISSION HOUSES AND CORRESPONDENCE
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You Take Absolutely No Chances IN BUYING THE WONDERFUL



(For Water Tube Boilers)

The same machine can also be used for return tubular boilers, which is provided with a hammer instead of cutter as it appears on this cut.

DIAMOND BOILER TUBE CLEANER.

The only known and successful device for removing scale and soot from return tubular or water tube boilers. Same machine can be used for both styles of boilers by changing the hammer. From 20 to 60 per cent. in fuel saved; prolongs the life of boilers, and is the means of avoiding possible accidents. Our Diamond Cleaner is in use in every part of the world, to whom we can refer you. Every Diamond Machine bears this trademark and is also stamped with our name.



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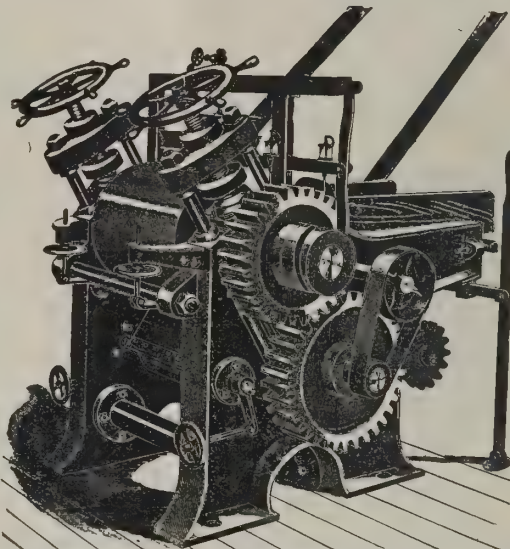
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THE Latest Improved Stem Roller

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Of very strong construction and containing the very best in workmanship and material throughout.

It will press stems to a thinness not easily distinguished from the leaf in the manufactured product.

It is also provided with a Roll-Moistening Device, insuring constant moistening of the rolls.

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Patent No. 738160—150 candlepower—saves 80 per cent. of gas and gives a beautiful electric effect.

Never Blackens Mantles.

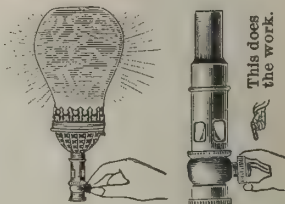
Incandescent Burners, as generally constructed, give much annoyance and trouble always to get the exact mixture of gas and air to make the most effective combustion, but with "Suvlight," by the simple movement of the thumb, the exact proportion of gas and air and the highest possible illumination are instantly obtained. Adapted for all kinds of lamps, mantles and any variation of gas pressure. It is the long-felt want in private and business houses. Write for lowest export prices.



"SUVIO" GAS HEATERS

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Over 9000 in Successful Operation.

PRICES FOR EXPORT ONLY:

1½ H. P. Two-Cycle Marine Engine	\$75.00
3 " " " "	90.00
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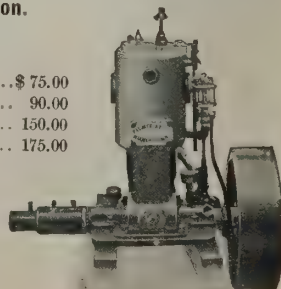
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Automobile Motors and Complete Launches.

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25. Quick and Easy Cork Puller.



28. Samson Cork Puller.



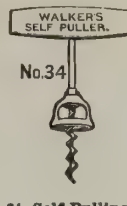
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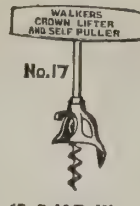
45. Acme Lemon Squeezer.



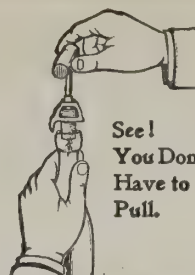
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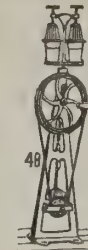
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17. Self-Pulling Cork Screw.



See!
You Don't
Have to
Pull.



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Any
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Exporter
will buy
and
forward
these
goods.

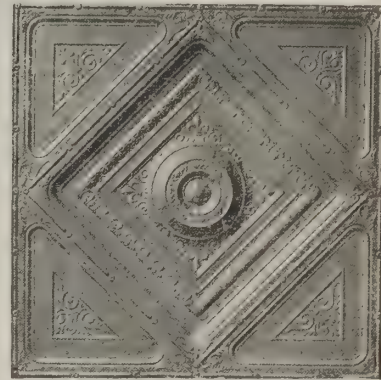
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Embossed Metal Ceilings and Side Walls

are the modern fireproof interior. Highly ornamental. Will not crack, peel or fall off. More durable than plaster or plaster of Paris. "Canton" Metal Ceilings are the best metal ceilings because the construction is right. Previous experience unnecessary to erect them. Plans and working drawings showing application mailed with every order. Made in classified designs suitable for lodge halls, churches, store rooms, palaces or cottages.

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PERFECT PROTECTION.

PERFECT RELIABILITY.

PERFECT SIMPLICITY.

THE WAGGONER WATCHMAN CLOCK

Reduces the Rates of Insurance.

A watchman clock, or recorder, is a device to be placed in the office, connected by wires to various stations about the premises, which the watchman is required to visit at regular intervals. The watchman records his visit at each station, which record is transmitted to the clock and recorded on a paper dial, showing the time and station registered. The watchman **does not have** access to the clock containing paper dial upon which his visits are registered.

There is not a manufacturing concern of any kind or description in the entire world but that is in need and a possible purchaser of a **Waggoner Watchman Clock**.

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With the view of increasing our foreign connections, we desire to correspond with leading business firms of undoubted facilities and financial standing in each trade center of the world.

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BRADLEY BRACKET.

Bradley Steel Shelf Brackets.

"The Most Popular Bracket Made."

We have made nothing but this **Steel Wire Shelf Bracket** during the past eleven years. We have learned how to make it, and are willing to sell it low. That is why our output is close on to 11,000 Brackets each day.

Orders received through export houses. Please specify "Bradley," and when ordering, to avoid errors, mail us duplicate of order.

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Upon receipt of Twenty-five Dollars and Forty Cents (\$25.40) in U. S. gold, or its equivalent we will box and deliver f. o. b. cars at New York City. Our Special Offer as follows:

BRADLEY BRACKET ASSORTMENT No. 2.

3 Dozen Pairs.....	4 x 5	6 Dozen Pairs.....	7 x 9
9 " " " " " "	5 x 7	4 " " " " " "	8 x 10
10 1/2 " " " " " "	6 x 8	1 " " " " " "	10 x 12

Weight, boxed ready for steamer, 200 pounds.
Size of case, 42x23x18 inches.

W. H. BOWDLEAR & CO.

Cable Address: "BOWDLEAR," BOSTON.

Exporters and Importers.

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"WHB" White.

Put up in 2-lb. parcels in cases of 54 lbs. for dealers. Blocks in large cases for manufacturers.

WAX

"WHB" Refined.

Put up in 2-lb. cakes in cases of 130 lbs. and in cakes of 1 lb., 1/2 lb., 1/4 lb. and 1 oz.

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MANUFACTURER AND EXPORTER OF

20 DIFFERENT STYLES.
SIZES 0 to 4.

Infants' Fine Soft-Sole Shoes.

Orders filled through commission houses. Correspondence solicited.



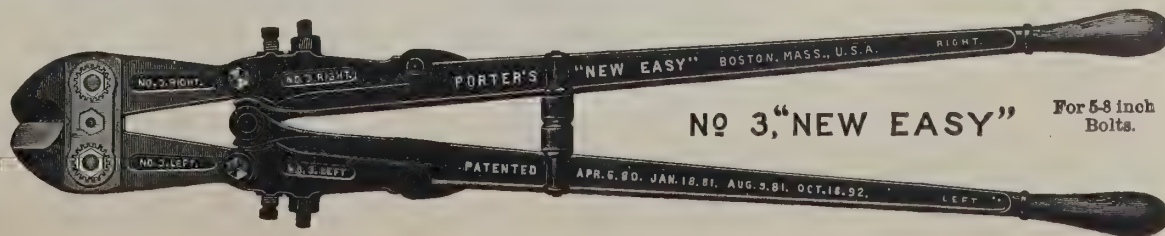
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IS THE BEST.

MANUFACTURED BY

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NO 3, "NEW EASY"

For 5-8 inch Bolts.

Indelible

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We manufacture the largest variety of Carbon Papers and Ribbons made by any one concern. 100 varieties to choose from in Typewriter, Pen, Pencil, Stylus and Railroad Carbons. Write for catalogue and export prices. Orders received through any New York exporting house at export rates.

INDELIBA MFG. CO., INC., ROCHESTER, N. Y., U. S. A.



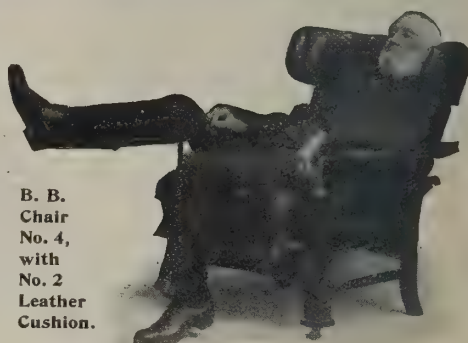
The B. B. Reclining Chair,

In which to Read, Rest, Sleep, Write, Study, Sew or Smoke.
Adaptable to Your Different Inclinations of Mind or Body.

The Chair here shown is that known as our B. B. No. 4. It is made in weathered oak finish and is leather covered. Upon receipt of **twenty-five dollars and fifty cents** in U. S. gold, or its equivalent, we will crate ready for steamer and deliver f. o. b. cars at New York City, **One No. 4 B. B. Adjustable Chair**, made from quartered-sawed oak, finished in either Golden, Weathered or Flemish.

Orders received direct or through export houses. Our illustrated catalogue, showing the various styles of chairs made by us, mailed postpaid.

DOMESTIC MANUFACTURING COMPANY,
Box 605, RACINE, WISCONSIN, U. S. A.



B. B.
Chair
No. 4,
with
No. 2
Leather
Cushion.

JABEZ TRUE. TRUE BROTHERS. Established 1876.
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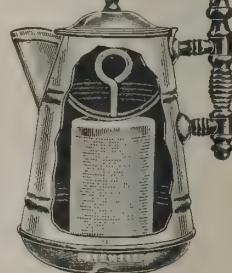
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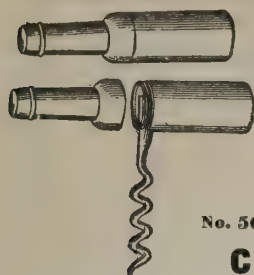
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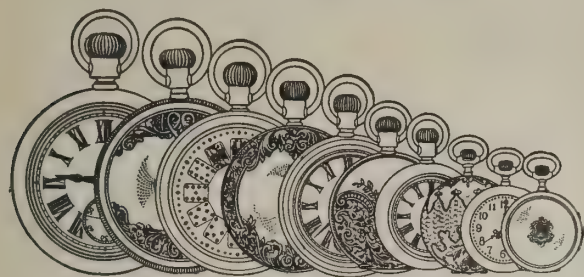
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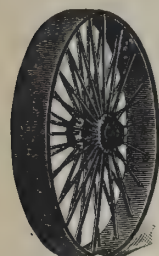


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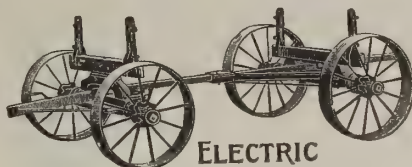
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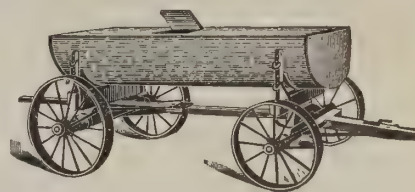
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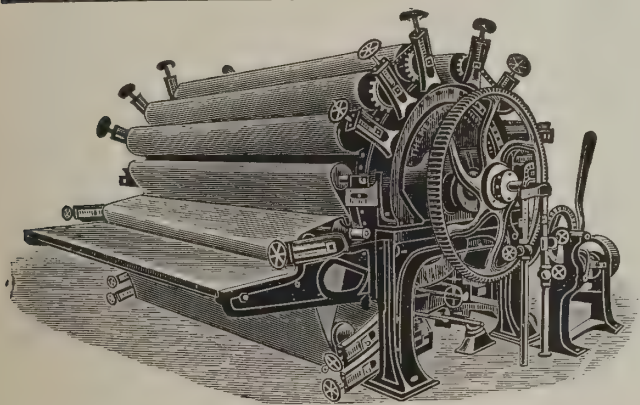
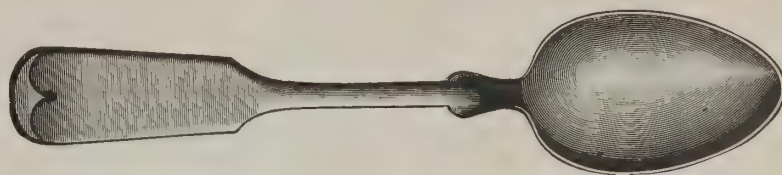
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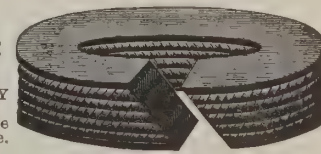
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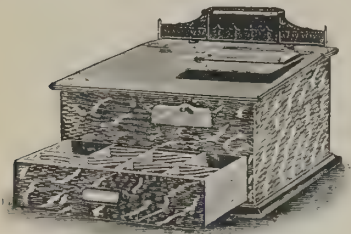


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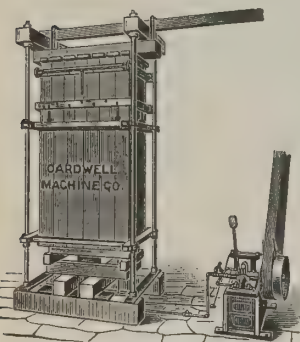
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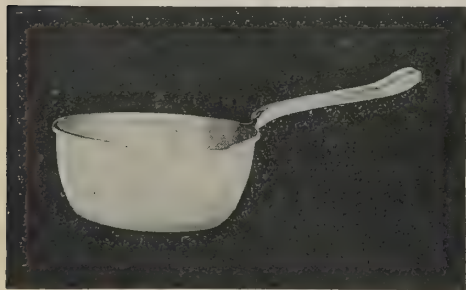
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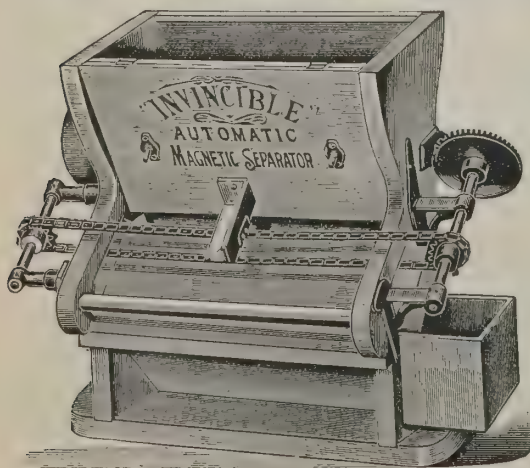
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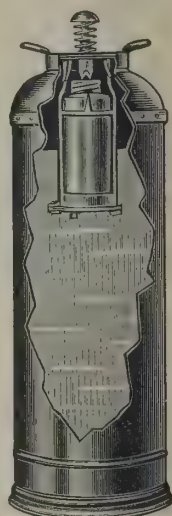
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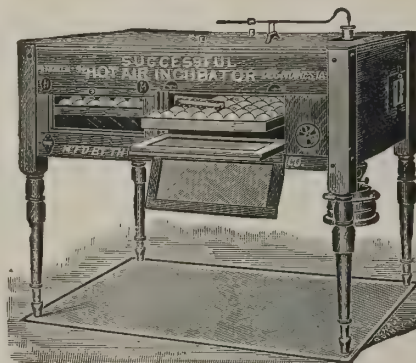
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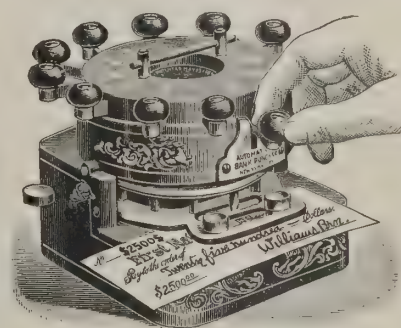
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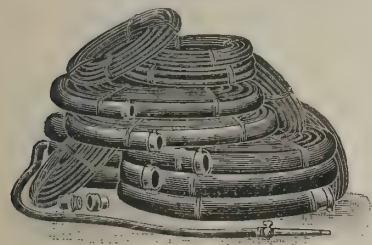
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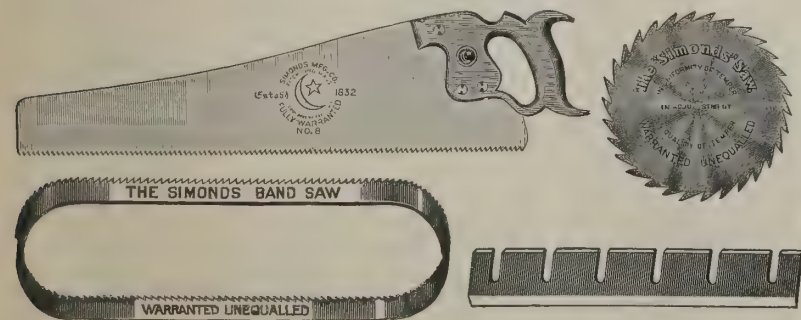
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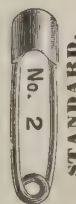
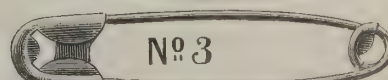
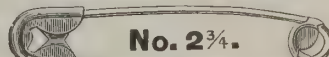
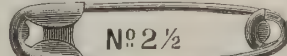
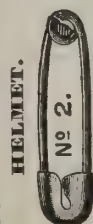
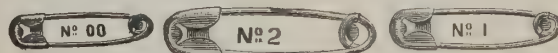


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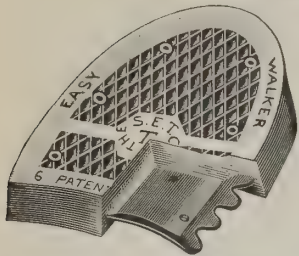
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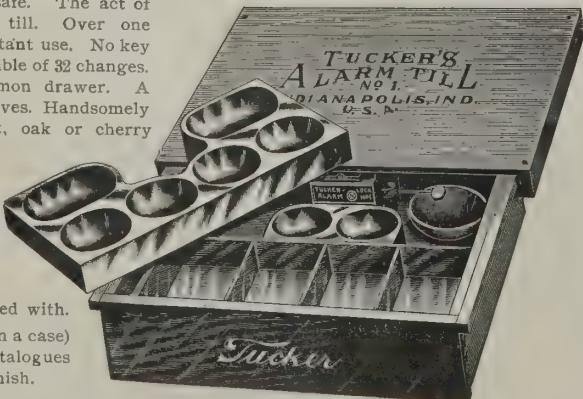
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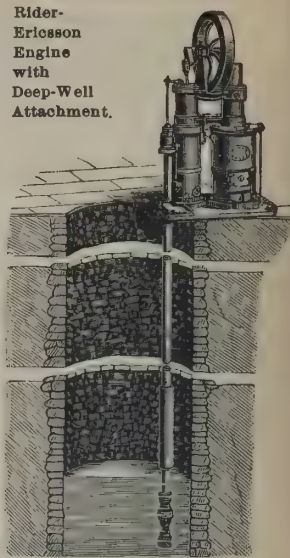
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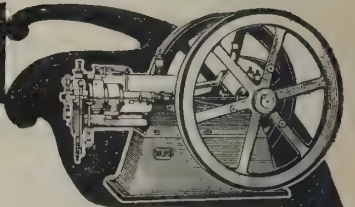
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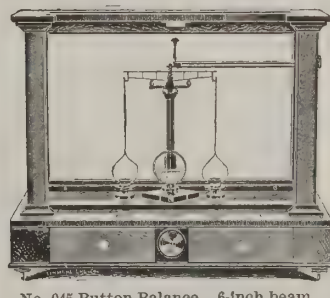
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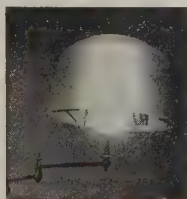
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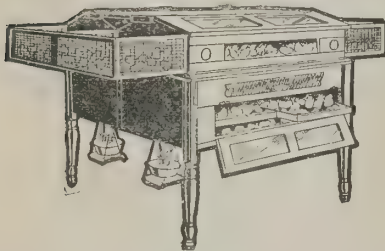
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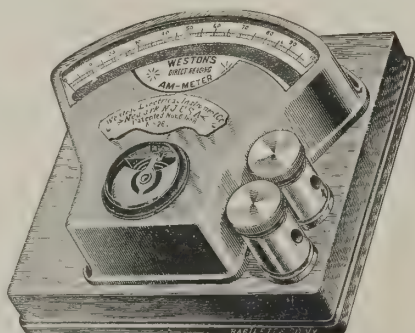
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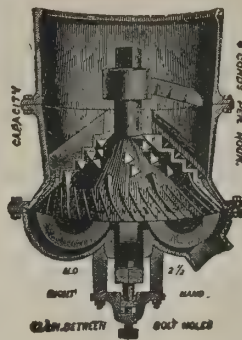
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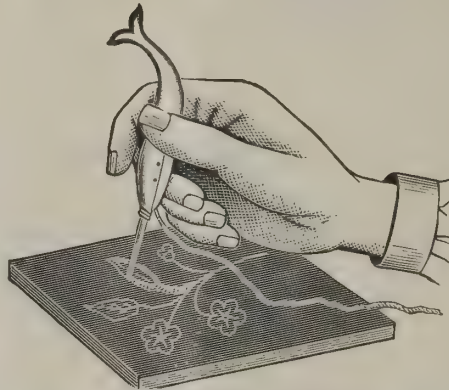
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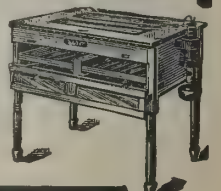
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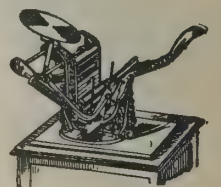
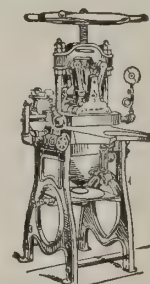
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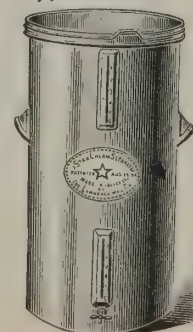
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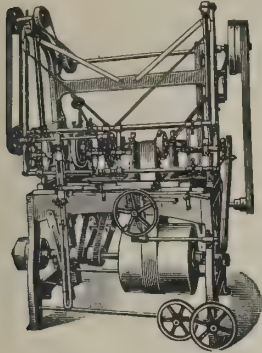


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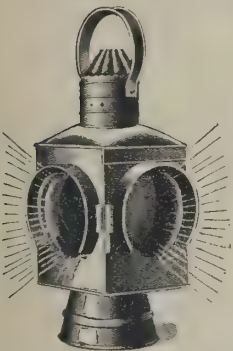


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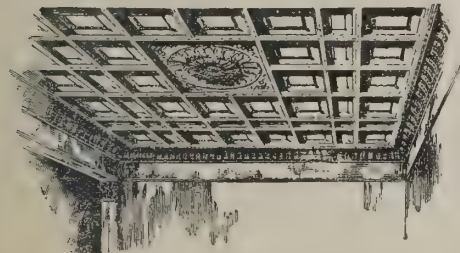
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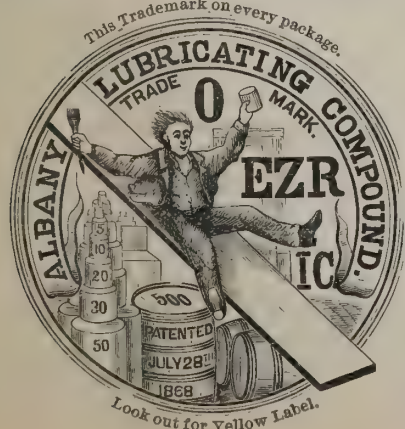
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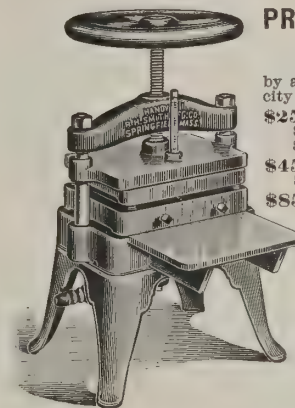
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THE ROYAL IMPROVED "HENIS" Self Basting BROILER

The Only Dripless Self-Basting Process.

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Established 1865. Incorporated 1883.

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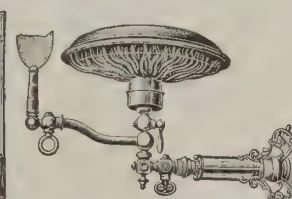
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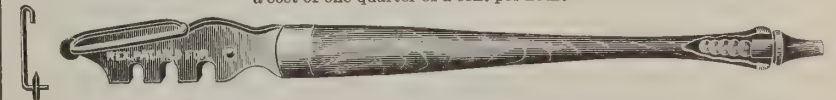
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A Unique, Compact and Ornamental Gas Furnace. Will heat an ordinary bedroom in 7 minutes at
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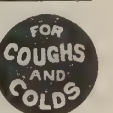
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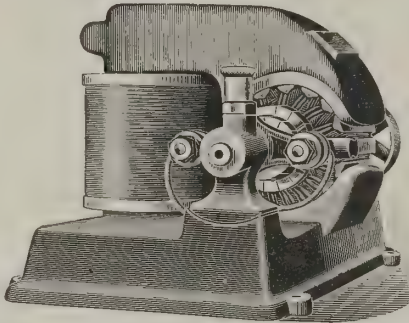
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Output: as a Dynamo, 8 lights or 450 watts; for Electro-plating, 6 volts and 50 amperes; as a Motor it will deliver $\frac{1}{2}$ horsepower.

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STEEL and WOUND
Musical Strings.

Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.

NATIONAL MUSICAL STRING CO.,
New Brunswick, N. J., U. S. A.

Rife Hydraulic Engine.
PUMPS WATER BY WATER POWER.

Irrigation with Rife engines. Does not require any care or expense. Water supply for towns, railroad tanks, country houses. All engines guaranteed. Catalogue free. Estimate furnished. Engines never stop. Pump water to 30 feet high for each foot of head. 4,000 engines successfully working.

RIFE ENGINE CO., 126 Liberty St., New York, U. S. A.

AYVAD'S WATER-WINGS

Price, 35c. each; \$2.50 per doz. for the trade only. Send \$5.00 and we will forward 2 doz. for trial. Every export house handles these goods now. It is a pocket life preserver and can be easily adjusted. A person weighing from 50 to 250 pounds can float on these wings. They are a great help to persons desirous of learning how to swim. Weight, 3 ounces.

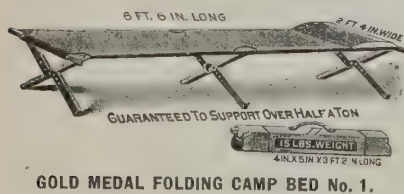
Ayvad Mfg. Co., Hoboken, N. J., U. S. A.

SILVER LAKE COMPANY, The Original Manufacturers of **Solid Braided Cordage.**
Boston, Mass., U. S. A.

WINDOW SASH CORD, COTTON, LINEN OR
RAILROAD BELL CORD, ITALIAN HEMP.
ARC LIGHT and TROLLEY CORD.

Catalogue "A" on application. **STEAM PACKINGS, SILVER LAKE & MILLER SOAPSTONE PACKING.**

THE BEST IS THE CHEAPEST:
CLOTHES LINES,
AWNING AND MASONS' LINES,
CHALK LINES, ETC., ETC.



GOLD MEDAL FOLDING CAMP BED No. 1.

Opened, it is a full-length, easy, elastic and comfortable bed. For camp, lawn, piazza or house. One dozen, f. o. b. New York, \$21.

GOLD MEDAL CAMP FURNITURE MFG. CO.,
Largest Makers of Camp Furniture in the World.

We have manufactured nearly 200,000 of our Cots for the United States Army, besides a great many of our other lines. Our products comprise Camp Beds, Cots, Tables, Chairs and Stools, Folding Bath Tubs, Hammocks, Swing Chairs and Lawn Furniture. Orders received direct or through export houses. When ordering through latter, specify GOLD MEDAL, and to avoid errors, please mail us a duplicate of order. Our illustrated catalogue, showing our various styles of Camp Furniture, mailed postpaid.

GOLD MEDAL CAMP FURNITURE MFG. CO., Racine, Wis., U. S. A.



Trade Mark.

Massachusetts Brand.

SOLID BRAIDED CORDAGE.

Sash Cord,
Clothes Lines,
Railroad Cords,
Arc Light Cord,
Lariats, Etc.



SEND FOR SAMPLES.

SAMSON CORDAGE WORKS,

Boston, Mass., U. S. A.

Awning Lines,
Masons' Lines,
Chalk Lines,
Curtain Cord,
Shade Line, Etc.

Trade Mark.



SAMSON BRAND.

RAWHIDE LACE LEATHER

SHULTZ PATENT SABLE RAWHIDE BELTING.

AGENTS ALL OVER THE WORLD.

For descriptive circulars address

SHULTZ BELTING COMPANY,
ST. LOUIS, MO., U. S. A.

Our Automatic Wire Straightening and Cutting Machine

Straightens and cuts accurately every minute from 60 to 160 feet of wire, any desired length, directly from the coil.

If your work requires riveting a number of rivets, or drilling a number of holes, you should send for our Booklet telling of the special labor-saving machines we make.

THE F. B. SHUSTER CO., Formerly John Adt & Son, New Haven, Conn., U. S. A.

Belting and Lace Leather
MADE BY
Bennett-Dryer Belting Co.,
ST. LOUIS, U. S. A.,
ARE THE BEST.

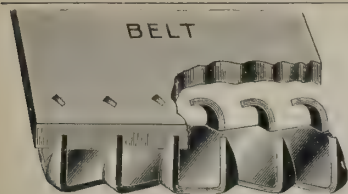
Write to us for samples and prices.
Agents wanted all over the world

CHIEF

THE BARNEY VENTILATING FAN WORKS,
Manufacturers and Exporters of the
Barney Compound Ventilating Wheel
for the Removal of Smoke, Dust, Heat, Steam, Foul Air or Gases, and for All Sorts of Ventilation.

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Correspondence solicited.

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For High-Speed and Hard-Running Belts.
Orders Filled Through Commission Houses.
Correspondence Solicited. Write for Catalogue T.

W. O. TALCOTT,
Exporter and Manufacturer of 180 Varieties
of Bolt Fastenings, PROVIDENCE, R. I., U. S. A.

O-HI-O STEAM COOKER & OIL STOVE CO.,

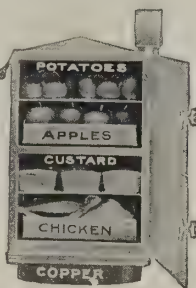
656-660 Jefferson St., Toledo, Ohio, U. S. A.

WE WANT FOREIGN AGENTS, and to get them quickly we are making the following liberal proposition for this month:

No. 1, square, copper tank, retails at \$6.00 each, 13-gallon food capacity; 6 cookers in a box. Measurements and weights of boxes holding six: Gross weight, 120 lbs.; Net weight, 90 lbs.; Cubic ft. in six, 11½. Price, f. o. b. New York, \$34.50 doz.

No. 3, round Cooker, retails at \$6.00, 10-gallon capacity, 12 cookers in a box, nested solid. Measurements and weights, 12 in a box: Gross weight, 150 lbs.; Net weight, 120 lbs.; Cubic ft. in 12, 11½. Price, f. o. b. New York, \$32.00 doz.

These are our best sellers, but we make twenty different styles of cookers, boxed ready for steamer. Order direct or through export house; in latter case mail duplicate order to us to avoid errors. We manufacture a full line of Kitchen Specialties and Blue-Flame Wickless Oil Stoves; all styles and sizes; prices from \$3.00 to \$22.00; 30 per cent. discount. Prices in U. S. currency or its equivalent. The Cooker saves 50 per cent. in fuel, time, labor and provisions. Saves services of a cook, or makes a good cook out of a poor one. Insures you deliciously cooked, easily digested, never spoiled, steaming hot meals, all cooked over one burner. Handsomely illustrated catalogue free.



No. 4 Cooker, Square e.

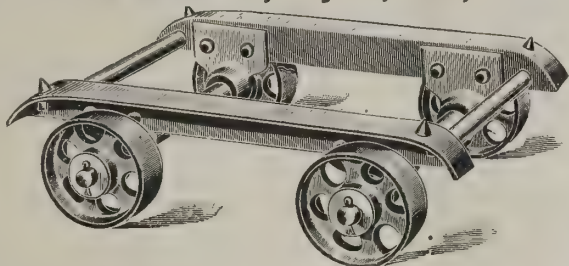
CITY FORGE & IRON WORKS, Dayton, Ohio, U. S. A.

Manufacturers and Exporters of

Gem Box Truck

It's made with and without Rubber Tires.

It's made with and without Roller Bearings



Will carry a load of 2000 pounds. Weight only 40 pounds. Orders filled through commission houses. Correspondence solicited. Catalogue "P" on application.

GOLD PENS—ALL SHAPES AND STYLES.

For Jobbers and FOUNTAIN PEN Manufacturers.

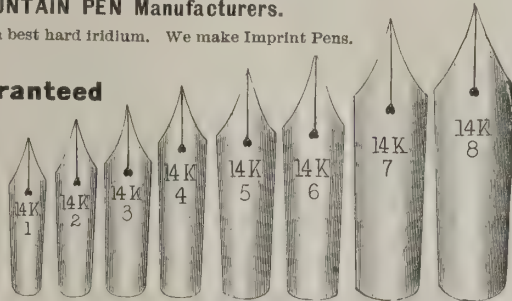
All Pens warranted 14kt. gold with best hard iridium. We make Imprint Pens. Imprints free on quantity orders.

Smooth Points Guaranteed

Full line Long and Short Nib Gold Pens. Send your name and let me quote you export price.

GEO. P. GAYDOUL,
17 John St., New York,
U. S. A.

Cable Address: "GOLDPENS,"
Western Union Code used.



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Manufacturer and Exporter of

Lead Composition and Brass

Pattern Letters and Figures

FOR FOUNDRY MEN AND PATTERN MAKERS.

Orders filled through commission houses. Correspondence solicited.
Catalogue "B" on application.

SENECA FALLS, N. Y., U. S. A.

C. E. MEADE,

Manufacturer and Exporter of

Babies' Soft-Sole Shoes.

SOFT AND PLIABLE,

And recommended by
leading physicians in the
United States and
Europe.

Orders filled through commission houses.

Correspondence solicited.

750 Lake Avenue, Rochester, N. Y., U. S. A.

THE EAGLE WINKER MFG. CO.

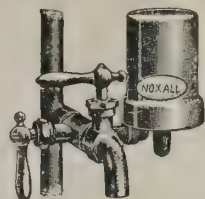
MANUFACTURERS AND EXPORTERS OF

Star Pointer Knee Boot, 20th-Century Toe Weight,
Chehalis Hopple, Winkers, Fronts and Housings.

Orders Filled through Commission Houses. Correspondence
Solicited. Catalogue B on Application.

NEWARK, N. J.

U. S. A.



Noxall Natural Stone Water Filters.

Make all water, no matter how dirty, absolutely pure. Prevent typhoid and all zymotic diseases. Are small, compact, simple and inexpensive. All sizes and prices from \$2.50 up. For full particulars, terms, discounts, etc., write to

AMERICAN FILTER CO.

580 Montgomery Bldg., Milwaukee, U. S. A.

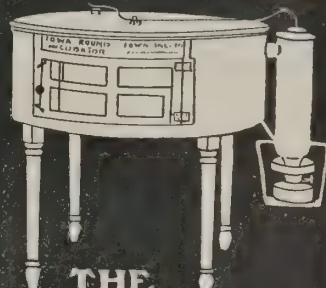
355 Eggs 354 Chicks

That's the result Mr. Geo. McDowell, Che-
mung Center, N. Y., obtained with an

IOWA ROUND INCUBATOR

The incubator that rounds out the largest
number of chicks per hatch every time. If
you are sure of your eggs you can rest
assured of the same number of chicks—
strong and healthy—with the Iowa Incu-
bator. Catalogue and prices free on request.

Iowa Incubator Co., Box 140, Des Moines, Iowa



THE
IOWA

The Glow Night Lamp.

A SCIENTIFIC WONDER

200 HOURS' LIGHT FOR ONE CENT.

Makes and consumes its own gas, gen-
erated from kerosene oil.
The only lamp using a glass burner.

**Absolutely Safe and Free
from Smoke or Odor.**

Catalogue and Price List sent on ap-
plication. Patented in the United
States, Gt. Britain, France and Austria.



Style 1.



Style 2.

THE GLOW NIGHT LAMP CO., Incor., 73-75 PEARL ST., Boston, Mass., U.S.A.



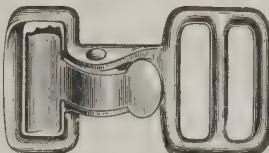
KEASEY WOOD SPLIT PULLEYS

with Malleable Iron Hubs are mechanically correct in design
and construction. No slippage on the shaft. No wide paddle-like
arms to fan the air and consume power. Be progressive and use a
modern pulley.

A half million already in daily use. Live machinery and supply dealers
everywhere handle and carry them in stock. Catalog on request.

THE KEASEY PULLEY CO., Toledo, Ohio, U. S. A.

Also Manufacturers of Hangers, Pillow Blocks, Shafting, Etc.
Send for Lists and Discounts.



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Manufacturer and Exporter of

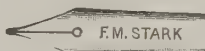
Lamb's National Strap Fastener and Leather Straps of All Description.

Orders filled through commission houses. Corre-
spondence solicited. Circular "L" on application.

192 Fulton Street, New York, U. S. A.

F. M. STARK,

111 Himrod Street,
BROOKLYN, N. Y., U. S. A.



Manufacturer of Fine Gold Pens.

ALL SHAPES AND STYLES.

Correspondence solicited. Order direct or through commission houses.

Rings that are Guaranteed to give wearer Satisfaction

MADE OF ROLLED-GOLD SEAMLESS WIRE.

In order to introduce our lines we are prepared to send
an assortment of our samples, 48 styles of our rings for
\$10.00, U. S. Currency, which will give an idea of the ex-
cellent quality of our manufacture. Catalogue and price
list on application. Orders executed direct or through
any export commission house.

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10-KARAT GOLD—GOLD-FILLED. STERLING Silver—ROLLED-GOLD. JEWELRY.

OUR LINE embraces the most complete assortment of Jewelry
adapted to REQUIREMENTS of ALL FOREIGN markets Illustrated
catalogue sent to wholesale dealers upon request. SPANISH and
ENGLISH edition. Write for copy.

S. & B. LEDERER CO., 100 Stewart St., Providence, R.I., U.S.A.

Write also Providence Stock Co., Mfg. Jewelers, Providence, R. I., U.S.A.
Offices also in New York, N. Y.; Chicago, Ill.



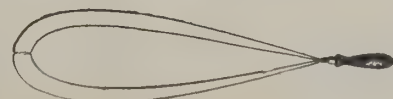
CADY MFG. CO., Auburn, N. Y., U. S. A.

MANUFACTURERS AND EXPORTERS OF THE

Cady Carpet and Rug Beater

and Other Specialties, in House Furnishings.

Beats all dust raisers. It is practically two beaters in one, as the illustration shows.
Is made of coppered steel wire and is 30 inches long. The four wires are twisted together,
going from one-half to two-thirds, and one clear through the handle, securing the same
permanently in place. Orders filled through commission houses. Correspondence solicited.



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It is *impartial* because it treats all its patrons alike. It cannot, for this reason, and it does not, publish write-ups or puffs of any specific make of goods, no matter whether advertised in it or not. It charges the same price for the same services to all alike.

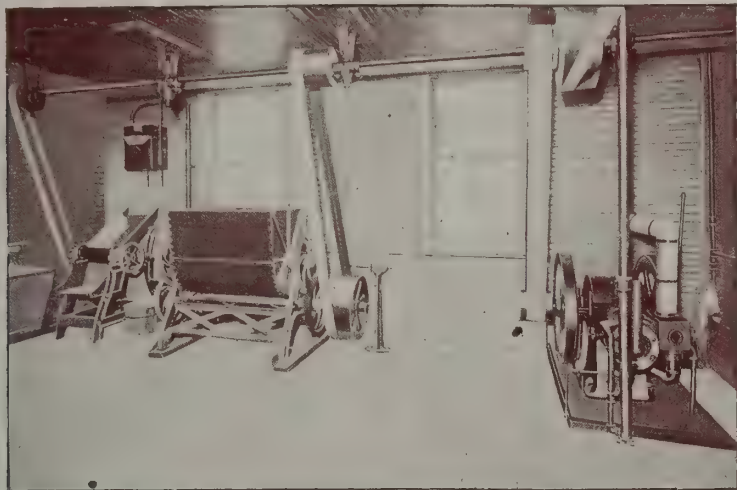
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THE JOHN C. COCHRAN CO.

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We illustrate herewith a Convenient Arrangement for the Baker's Workshop.

The machine at the left is our No. 2 Dough Brake, the next our 1½-barrel Dough Mixer, and on the extreme right our 7½-H. P. Gas Engine. The cost of this outfit, including pulleys, shafting and freight f. o. b. New York, boxed, is \$686.00 (£140).

The floor space is 18x6 feet.

Net weight of engine, 2568 pounds; gross weight, 3070 pounds; box dimensions, 46x66x45 inches.

Net weight of dough brake, 667 pounds; gross weight, 967 pounds; box dimensions, 31x48x50 inches.

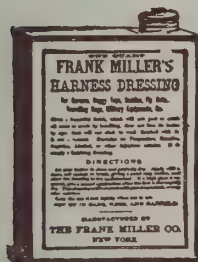
Net weight of mixer, 1368 pounds; gross weight, 1675 pounds; box dimensions, 76x36x52 inches.

WRITE TO US FOR FULL PARTICULARS AND PRICES ON LARGER SIZES.

THE J. W. RUGER MFG. CO.,
BUFFALO, N. Y., U. S. A.

FRANK MILLER'S HARNESS OIL.

Preserves and softens the leather, thus adding life.
The highest quality of oil on the market.



FRANK MILLER'S Harness Dressing.

Recognized as

"THE STANDARD."

Produces a brilliant jet-black gloss, which will not peel or smut, and to which dirt will not stick.

ESTABLISHED 1838.

The Frank Miller Co.

349 & 351 West 26th Street, New York,

U. S. A.

MANUFACTURERS OF

Blackings and Leather Dressings.

The goods mentioned are but a few of our many preparations for leather. Write to any New York Export Commission House for our Complete Price List and Samples.

**Our Preparations Are Uniform in Quality and
Always Give Perfect Satisfaction.**



FRANK MILLER'S CROWN

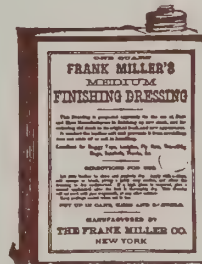
SHOE DRESSING.

For Ladies' and Children's Black Shoes. Produces a perfect finish, without injury to the finest leather. Each bottle in handsome carton.

FRANK MILLER'S MEDIUM Finishing Dressing.

For use of Boot and Shoe Manufacturers in finishing new stock, also for restoring old stock to its original fresh and new appearance.

Softens and Preserves.
Prevents Mould.
Does Not Scale Off.



Hook's "Rapid" Painting Machine

Does the work of fifteen men with brushes,
and does it better. Thousands in use.

Hook's No. 10 "Rapid" Painting Machine consists of a special brass liquid and air pump attached to a heavy ALUMINIZED iron tank, and equipped with ten feet of hose, extension pipe (for reaching overhead work without the use of scaffolds or ladders) and special painting nozzle.

It will save its cost in painting 5000 sq. ft. of surface.
Will spread any liquid of a sprayable nature.

SPECIAL OFFERS FOR EXPORT ONLY:

Upon receipt of TEN DOLLARS we will box and deliver f. o. b. cars at New York City ONE No. 10 "RAPID" PAINTING MACHINE, complete; gross weight, 40 lbs.; box, 12½x12½x36 inches; or,

Upon receipt of SIXTY DOLLARS we will box and deliver f. o. b. cars at London, England, SIX OF THE No. 10 "RAPID" PAINTING MACHINES, complete.

Equally low prices to other foreign ports. Remittances to be in U. S. gold or its equivalent.

We refer to 30,000 satisfied users of our machines.

The "Stay-There" Ready-Mixed Cold Water Paint

is composed of minerals ground in a liquid chemical, to be thinned with water. Packed in tight, iron-hooped barrels. IT IS AS DURABLE AS OIL PAINT; will not chalk or peel off; is fireproof, waterproof, washable and sanitary.

Upon receipt of SIX DOLLARS we will deliver f. o. b. cars at New York City ONE HUNDRED GALLONS of WHITE "STAY-THERE" PASTE PAINT. Gross weight, 400 lbs.; barrel, 28x28x20½ inches.

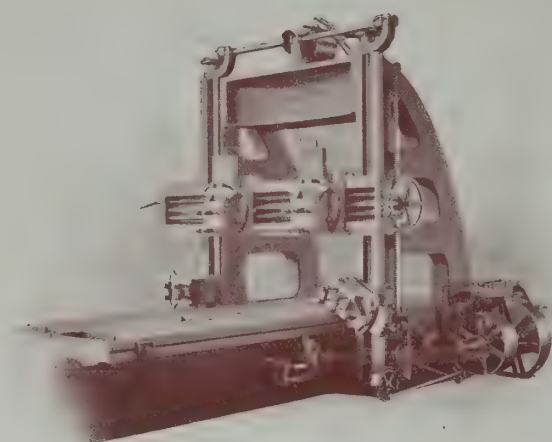
Our 1904 Catalogue, illustrating and describing the largest line of Painting Machines for every purpose, and the "Stay-There" Paint, will be mailed free to any part of the world. We will open accounts with responsible importers furnishing American references. Orders accepted through New York commission houses.



THE HOOK-HARDIE COMPANY,

37-52 Hook Building,

HUDSON, MICHIGAN, U. S. A.



60-inch Pond Planer.

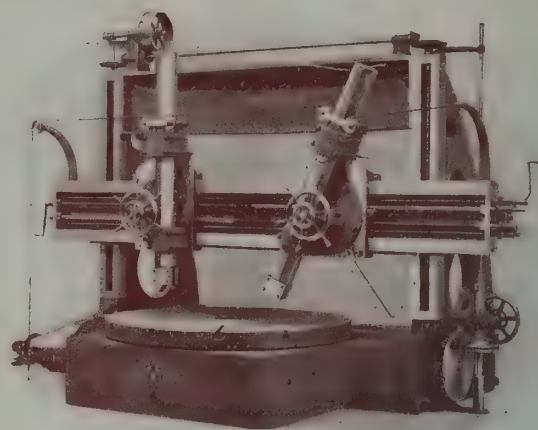
Pond Planers are built in twenty-one sizes, taking from 26 to 170 inches square between housings; for planing any length.

Machine Tools. Electric Traveling Cranes.

Complete Equipments

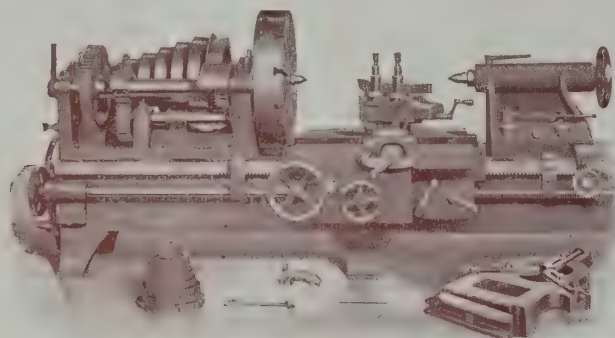
FOR
Machine Shops, Railway Shops
and Shipyards.

Send for Illustrated Catalogue,
stating kind of machine in
which you are interested.



**10-foot Niles Boring and Turning
Mill.**

Niles Boring and Turning Mills are built in twenty-five
sizes, from 30-inch to 30-foot swing.

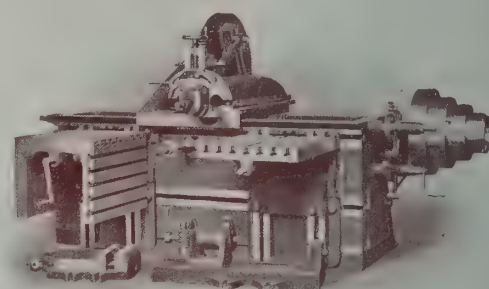


32-inch Pond Triple-Geared Lathe.

Pond Lathes are built in twenty-four sizes, from 22 to 84
inches swing over the ways; turning any reasonable
length.

NILES- BEMENT- POND CO.,

136-138 Liberty Street,
New York, U. S. A.



26-inch Bement Shaper.

Bement Traveling Head Shaping Machines are
built with one or two heads, in four sizes, from
12 to 26 inch stroke.

London Office: 23-25 Victoria Street.

CABLE ADDRESSES:

"Nilesco," New York.

"Niliacus," London.

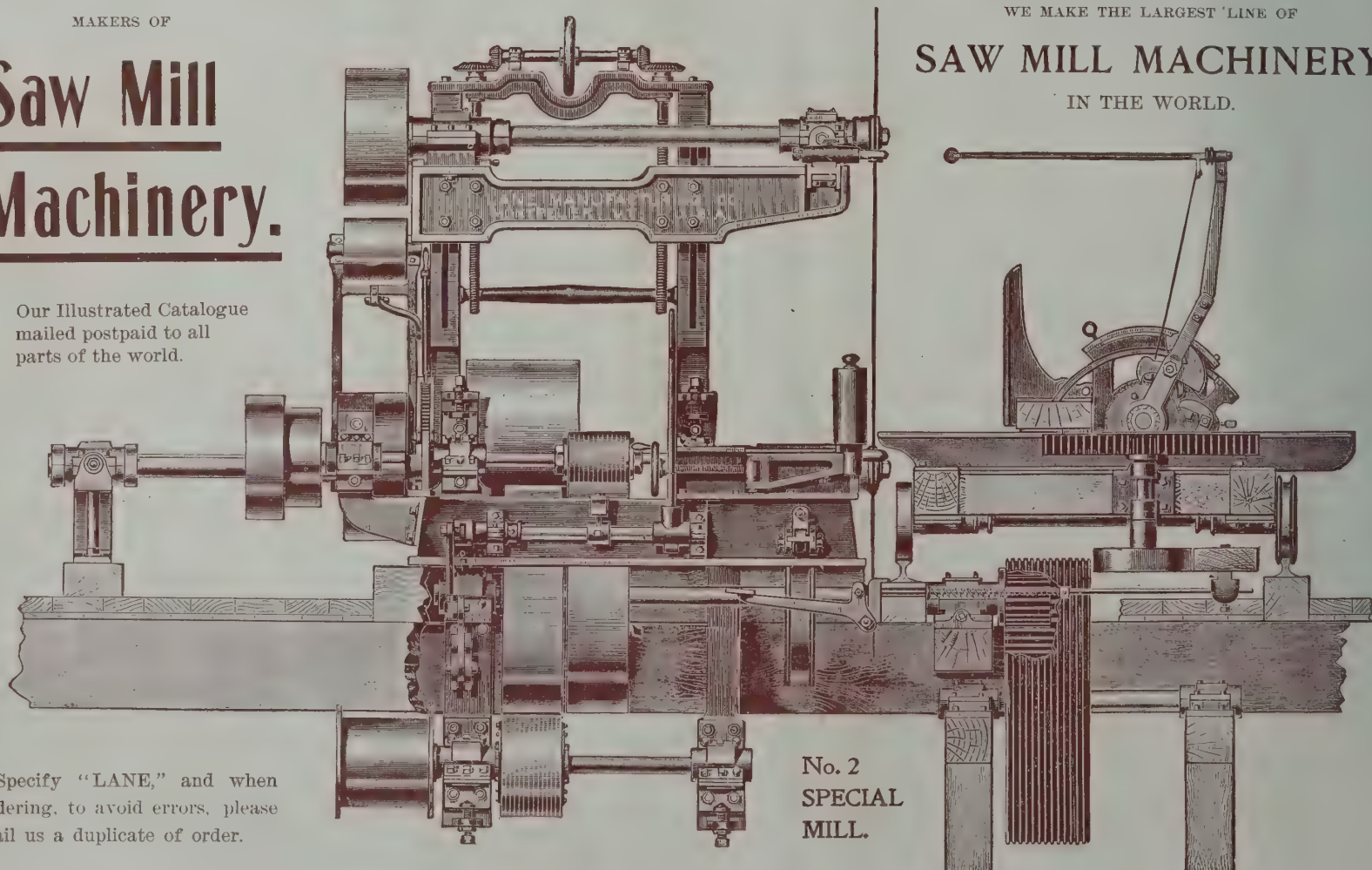
LANE MANUFACTURING CO., Montpelier, Vermont, U. S. A.

MAKERS OF

Saw Mill Machinery.

Our Illustrated Catalogue
mailed postpaid to all
parts of the world.

WE MAKE THE LARGEST 'LINE OF SAW MILL MACHINERY IN THE WORLD.



Specify "LANE," and when
ordering, to avoid errors, please
mail us a duplicate of order.

No. 2
SPECIAL
MILL.

The American Exporter

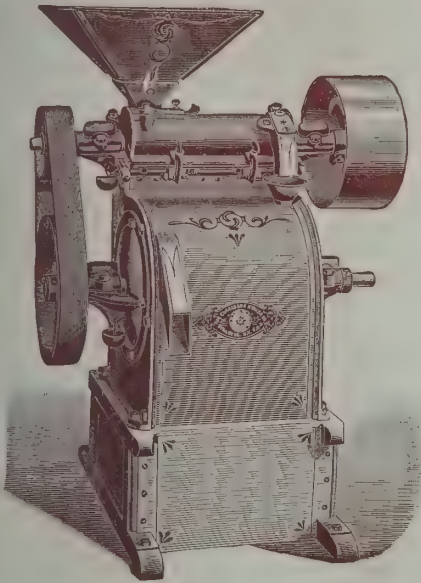
WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIII.

NEW YORK, FEBRUARY, 1904.

No. 3.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

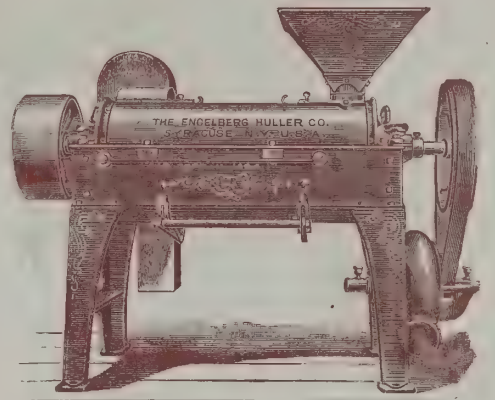


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the **Only** machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.

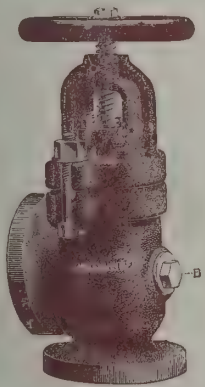


Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

THE ENGELBERG HULLER COMPANY, P. O. Box B,
Syracuse, N. Y., U. S. A.
Export Office: 339 Produce Exchange, New York City.

LUNKENHEIMER "DURO" BLOW-OFF VALVE.



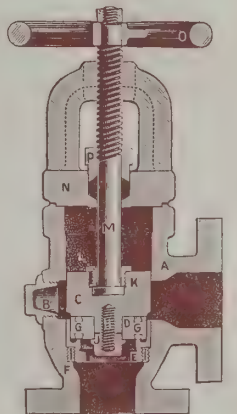
A valve with self-cleansing seat, simple and practical in construction and entirely different from all other blow-off valves in the market.

The way the "Duro" is built no scale or sediment can lodge on the seat. If you want a practical success and a Valve that will last as long as the boiler, you want the "Duro." No boiler should be without one.

Made in screw ends, flange ends and screw and flange ends, in 1¼, 1½, 2, 2½ and 3 inch sizes. Every valve rigidly tested and inspected before shipment. Specify the "Duro" and order from any leading export house.

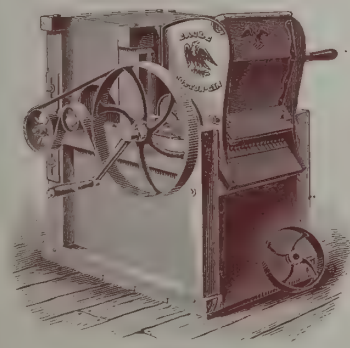
Write for Catalog of Brass and Iron Steam Specialties and Engineering Appliances of Superior Quality.

THE LUNKENHEIMER COMPANY, Sole Makers,



BRANCHES: New York, 26 Cortlandt Street.
London, 35 Great Dover Street, S. E.
Paris, 24 Boulevard Voltaire.

CINCINNATI, O., U. S. A.

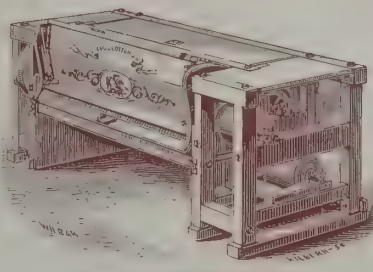


Hand Gin.

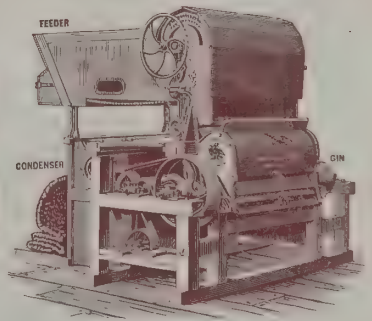
EAGLE COTTON GINS.

These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

CONTINENTAL GIN CO., Inc., Successors to EAGLE COTTON GIN CO.,
BRIDGEWATER, MASS., U. S. A.

Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

BEWARE
OF
IMITATIONS

NOTICE
SCRIPT NAME
OF

Stewart Hartshorn

ON LABEL,
AND GET
THE GENUINE

HARTSHORN

BEWARE
OF
IMITATIONS

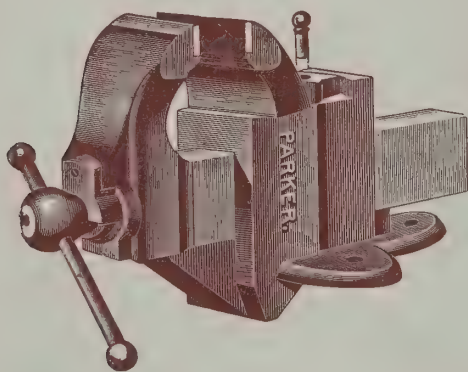
Sold All Over the World. Order through your Commission Men.

STEWART HARTSHORN CO.

Office and Factory:

EAST NEWARK, NEW JERSEY, U. S. A.

Stockroom: No. 7 Lafayette Place, New York.



THE Parker Vise

Unequaled for Strength, Durability and Finish.

Has stood the test of over 50 YEARS.

EVERY VISE MADE FOR SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over 60 YEARS and will stand comparison with any Mill in the market.

We manufacture a line of

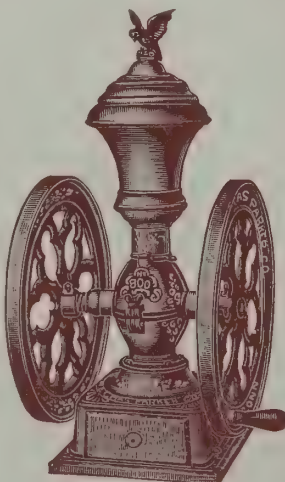
Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

Enquiries concerning our line will have prompt attention. Catalogues on application.

THE

CHAS. PARKER CO.,
MERIDEN, CONN., U. S. A.

NEW YORK SALESROOM: 96 CHAMBERS STREET.



DIETZ Nos. 30 and 60 TUBULAR SEARCH LIGHTS.

These lamps are made for outdoor or indoor use. They give a powerful and brilliant light, and are not affected by the wind.

They are suitable for use in mills, workshops, warehouses, stables and summer resorts, or in any other place where a good light is required which will not be affected by strong breezes.

Where it is desired to light up a long row of animals or a long, narrow room of any kind, these lamps are especially desirable.

No. 30 is fitted with our patent bull's-eye lens on perforated plate, adding to the appearance of the light.

No. 30 has a blizzard globe, 1-inch wick and a bright tin reflector 12 inches in diameter. Price, \$30.00 dozen.

No. 60 has a No. 2 globe, 1 1/4-inch wick and a bright tin reflector 16 inches in diameter. Price, \$72.00 dozen.

We are pleased to send complete catalogues (Spanish or English) and price list to those interested.

R. E. DIETZ
COMPANY,

NEW YORK, U. S. A.

Established 1840.



Arcade Manufacturing Co.

(INCORPORATED 1885).

Manufacturers of

"HANDY" CORK PULLER,
"CHAMPION" CORK PULLER,

Phoenix Cork Puller, Perfect Lemon Squeezers
and "Crystal," "Imperial," "Jewel,"
"X-Ray," "Royal Pound," "New
Home" and "Favorite"

COFFEE MILLS,

AND

"PERFECT" LEMON SQUEEZERS

NOTE.—The prices here quoted include boxing ready for transportation and delivered F. O. B. cars at New York City.

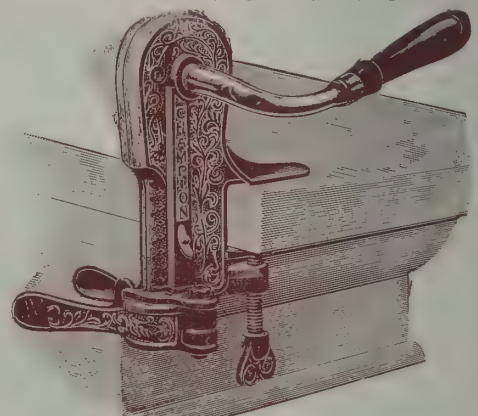
No. 100. Handy Cork Puller is "A Little Beauty." Is simple, compact and reliable. Can be fastened to a bar or table in the regular way; packed one in a box, twelve in a case. Price per dozen, cased ready for transportation, \$12.50. Size of case, 13x17 1/4x28 inches. Weight: Gross, 80 pounds; Net, 66 pounds.

"Handy"
Cork Puller
No. 100.

No. 1. Champion Cork Puller. The Champion "is abreast of the times," and "way ahead of all competitors; will quickly and safely draw the cork from any bottle, and as readily recorks the bottle after part of contents has been used—a feature highly appreciated by all users. Made of the best grades of oil-tempered steel. A quick and sure puller and effective recorker. Especially adapted for use in hotels, cafés, clubs, restaurants or wherever a stationary puller can be used. Packed in individual boxes. Each case contains six (6) Champion Cork Pullers. Price per dozen, \$24.00. Size of two cases, each containing six Champion Cork Pullers, 15 1/4x24 1/2x26 inches. Weight: Gross, 128 pounds; Net, 90 pounds.

Orders received direct or through export commission houses. Please mail us duplicate of order. NOTE.—Our Catalogue, illustrating and describing the various styles of Hardware Specialties Manufactured by us, mailed postpaid.

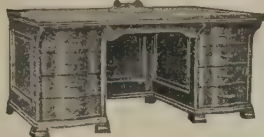
ARCADE MANUFACTURING CO., - Freeport, Ill., U. S. A.



"Champion" Cork Puller No. 1.



No. 555—\$20.00.



No. 515—\$100.00.



No. 1—\$36.00.

ESTABLISHED 1880.

GRAND RAPIDS DESK CO.

MANUFACTURERS OF

High-Grade Desks and Sectional Bookcases

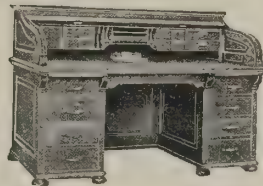
FOR THE OFFICE AND HOME.



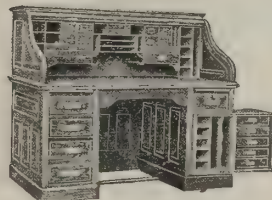
No. 505 1/2—\$130.00.



No. 510—\$230.00.



No. 500—\$210.00.



No. 506A—\$78.00.

NEW DESIGNS.

SUPERIOR WORKMANSHIP.

SUPERB APPEARANCE.

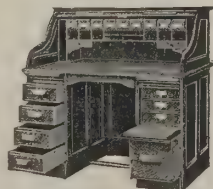
Our New Line of Sectional Bookcases and Desks, recently placed upon the market, embody the results of over Twenty Years' Practical Experience in Actual Manufacturing.



Works of the GRAND RAPIDS DESK CO., Muskegon, Michigan, U. S. A.

The prices here quoted are for desks boxed ready for steamer, f. o. b. New York. Orders received through export houses. To avoid errors please mail a duplicate of order to us.

Our 100-page Catalogue, illustrating the various styles of Desks and Bookcases made by us, mailed postpaid.



No. 10—\$34.00.



No. 6—\$60.00.



No. 4—\$80.00.



No. 3—\$70.00.



No. 5—\$70.00.

GRAND RAPIDS DESK CO.

Manufacturers,

Muskegon, Michigan, U. S. A.

The LEONARD Cleanable Refrigerators.

Freely Acknowledged to Be the Best in the World.

Made in GRAND RAPIDS, MICH., U. S. A.

Seven walls to save the ice. Air-tight locks. Sliding, adjustable shelves, and many other improvements. Outside cases, ash with quarter-sawn oak panels, dark golden finish. Walls packed with mineral wool. These prices F. O. B. New York, Boston, Philadelphia or Baltimore, crated for export. The sizes given are: first, width across the front; second, depth from front to back; third, height. All outside measurements in inches.



Single door, zinc lined.
No. 070—Size, 25x17x40.....\$7.19
No. 70—Size, 27x18x42.....\$8.61



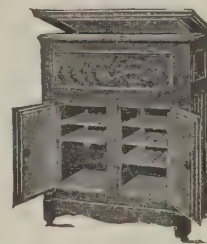
Single door, zinc lined.
No. 71—Size, 30x19x45.....\$10.31
No. 71A—Size, 32x20x47.....\$11.65
No. 72—Size, 32x24x48.....\$12.91



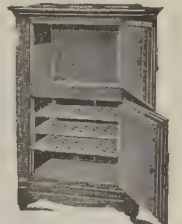
Double door, zinc lined.
No. 73—Size, 33x20x46.....\$12.50
No. 74—Size, 35x21x48.....\$14.06



Apartment House, zinc lined.
No. 93—Size, 27x18x49.....\$10.60
No. 94—Size, 29x19x55.....\$12.34
No. 95—Size, 30x20x60.....\$13.96
No. 96—Size, 36x24x68.....\$20.45



Double door, zinc lined.
No. 75—Size, 40x23x50.....\$18.20



Apartment House, zinc lined.
No. 85—Size, 33x21x45.....\$12.16
No. 86—Size, 35x22x53.....\$14.50



Four doors, zinc lined.
No. 58—Size, 38x22x48.....\$17.75
No. 76—Size, 40x25x57.....\$22.25
No. 77—Size, 43x25x62.....\$24.95



Six doors, zinc lined.
No. 59—Size, 45x28x65.....\$32.60
No. 60—Size, 54x31x73.....\$42.60
No. 62—Size, 55x32x79.....\$47.00
No. 66—Size, 64x35x85.....\$58.20



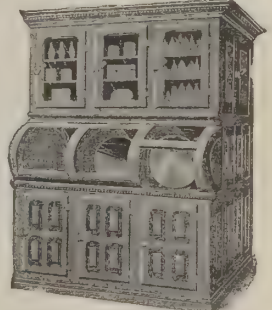
Double doors, lined with real Porcelain on sheet steel.
No. 3—Size, 36x21x47.....\$20.90
Single door, lined with real Porcelain on sheet steel.
No. 2—Size, 31x19x45.....\$16.05



Three doors, lined with real Porcelain on sheet steel.
No. 4—Size, 35x22x46.....\$22.35
Four doors, lined with real Porcelain.
No. 6—Size, 42x28x54.....\$34.35



Four doors, lined with real Porcelain on sheet steel.
No. 57—Size, 47x28x60.....\$40.75



No. 323—Grocer's Refrigerator; wood lined, polished oak cases. Roll top for butter flasks; storage below. Ice in top at rear.
No. 322—2 rolls; size, 46x41x84.....\$65.00
No. 323—3 rolls; size, 68x41x84.....\$81.00
No. 324—4 rolls; size, 90x41x84.....\$105.00

Orders received through any exporter in New York, Boston, Philadelphia or Baltimore, or through our own Export Office, 54 Warren St., New York. E. L. D. Hester, Mgr.

GRAND RAPIDS REFRIGERATOR CO., Grand Rapids, Mich. U. S. A.

THE LEONARD OFFICE SPECIALTIES.

LEONARD SECTIONAL ELECTROTYPE CABINET,

For Electrotypes, Coins, Minerals, Specimens of Natural History, Proofs, Engravings, Tools, Laces, Jewelry, Dental Supplies, Etc. Made of golden finished oak. Each section has 10 drawers 1 1/2 in. deep and is 36 in. wide, 24 in. deep and 10 in. high. Price, f. o. b. cars New York, each Section, \$6.00; Top, \$1.00 extra; Base with Casters, \$1.50 extra. Weight, boxed ready for steamer, 100 pounds.

Leonard Catalogue Cabinet.

A convenient method for filing and classifying over one thousand Catalogues, Circulars, Etc. A Cross Index System accompanies each Cabinet. Made of golden finished oak, highly polished. Size, 32 inches wide, 24 inches deep and 63 inches high. Mounted on strong ball-bearing casters. Price, f. o. b. cars New York, \$27.75. Weight, boxed ready for steamer, 375 pounds.



Leonard Sectional Electrotpe Cabinet.



Leonard Catalogue Cabinet.

LEONARD MANUFACTURING CO., Grand Rapids, Mich., U. S. A.
New York Office, 54 Warren St. E. L. D. HESTER, Manager.

ESTABLISHED 1846.

ESTEY ORGAN COMPANY,

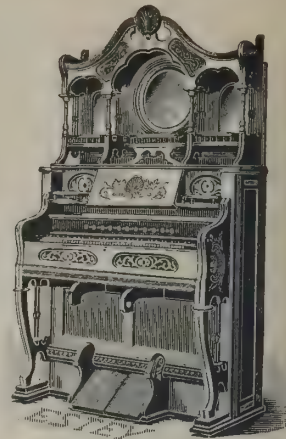
Brattleboro, Vermont, U. S. A.

Cable Address: "Estey," Brattleboro, U. S. A.

Builders of High-Grade Organs and Pianos

ESTEY PIANO. Style 20.

Made in mahogany, oak and American walnut. 7½ octaves, scale A to C. Height, 4 feet 3 inches; Length, 6 feet; Depth, 2 feet 3 inches; Weight, boxed, 850 pounds.



ESTEY ORGAN. Style "S."

Solid walnut or oak case. Height, 6 feet 8 inches; Breadth, 3 feet 10 inches; Depth, 1 foot 11 inches; Weight, boxed, 400 pounds.

Over three hundred and fifty thousand (350,000) in use throughout the civilized world.

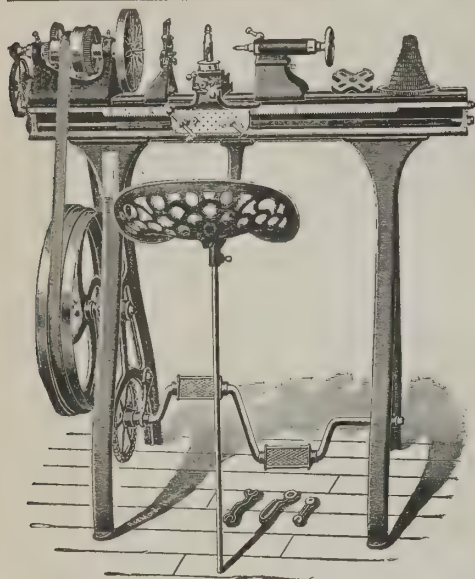
The **Estey Reed and Pipe Organs** are specifically made for use in churches, chapels, music and lecture halls, Masonic lodges, schools and residences.

The **Estey Pianos** are made in several styles of Upright and Grand.

Our Catalogue, illustrating and describing the various styles of Organs and Pianos made by us, mailed postpaid to all parts of the world.

None but the most skilled workmen and the best of material are employed in the making of the **Estey Organs and Pianos**. Prices quoted F. O. B. cars at New York City. Specify "Estey," and when ordering, to avoid errors, please mail us a duplicate of order.

NOTE.—To facilitate the handling of our export trade we desire to communicate with one responsible musical instrument dealer in each trade center of the world.

**Barnes' Patent Foot, Hand and Steam Power Machinery**

FOR WOOD AND METAL WORK.

SCROLL SAWS, CIRCULAR SAWS, LATHES, MORTISERS, TENONERS, GRINDING MACHINES, DRILLING MACHINES, ETC.

Particular attention given to the proper execution of orders for export. Illustrated catalogues and price lists in Spanish and English free on application. Orders received through any reliable commission house in the United States. Prices and trade discounts quoted on application.

W. F. & JOHN BARNES CO.,

Sole Manufacturers,

791 Ruby Street,

Rockford, Illinois, U. S. A.



ONCE SOLD, THEY NEVER COME BACK.

OCEAN WAVE WASHERS

Wash the clothes as easily and cleanly as sea waves wash the beach.

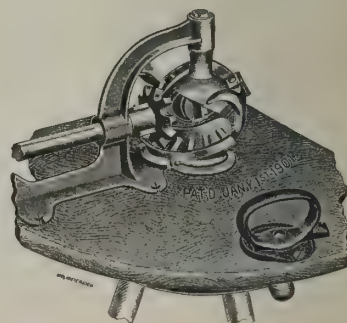
OVER 100,000 NOW IN USE.

Shipping weight, 85 lbs.

Size, 2 x 2 x 3—12 cubic feet.

SPECIAL FEATURES.

Our Gearing: Simple in construction; impossible to throw out of gear; the longer it is used the easier it will run. Our Fly Wheel has no threads to strip; no nuts to lose, being attached or detached in a moment's time. Our Improved Dasher is hand-turned; clothes do not cling to it and tear. We assure free action of dasher by using heavy galvanized flanged ring in dasher block, thereby relieving all friction. In general construction of tub and finish, only best materials are used. We ship through any responsible New York exporter. All orders must be sent to us direct.



THERE IS NO FRICTION.
NO LOST MOTION.

VOSS BROS. MFG. CO.,
DAVENPORT, IOWA, U. S. A.

KALAMAZOO TROLLEY WHEELS AND HARPS

KALAMAZOO HARP.

Have been adopted exclusively by over 300 companies, operating 28,000 cars in the United States, and are now being installed upon all principal electric lines throughout the world.

SPECIAL SAMPLE OFFER FOR EXPORT ONLY.

Kalamazoo Trolley Wheels, \$12.50 per dozen. Will fit any standard harp.

Kalamazoo Harps, \$12.00 per dozen. Made for standard wheels and poles.

The prices quoted include boxing, ready for steamer, f. o. b. cars, New York.

With the view of facilitating our EXPORT TRADE, we desire to communicate with one responsible electric power company in each trade-center of the world.

THE STAR BRASS WORKS,

The Largest Exclusive Trolley Wheel and Harp Makers in the World,

KALAMAZOO, - - - - MICHIGAN, U. S. A.



KALAMAZOO TROLLEY WHEEL.

WILLIAM D. WARNER, PROVIDENCE, R. I., U. S. A.

SOLE MANUFACTURER AND EXPORTER OF

Herculene Cold Water Paint.

Used both for outside and inside work. Sanitary, fireproof and durable. A substitute for paint, whitewash and kalsomine. Packed in dry powder form. Five pounds make a gallon of paint. Used universally in factories, warehouses, public buildings, etc. Orders filled through commission houses. Correspondence solicited. Catalogue D on application.





"1900" Washer

**"1900"
Ball-Bearing
Washing
Machines.**



"Domestic" Washer.

**"1900"
Ball-Bearing
Washing
Machines.**



"Home" Washer.

**"1900"
Ball-Bearing
Washing
Machines.**



"1900 Junior" Washer.

A REMARKABLE RECORD!!!

Commencing in the year 1900 to manufacture the "1900" Washing Machine, we at that time "turned out" an average of **Five Washers per day**. During the month of August, 1903, we manufactured and sold **OVER FOUR HUNDRED Washers per day**.

A REMARKABLE RECORD!!!

REWARD OF MERIT!!!

REWARD OF MERIT!!!

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-one years' practical experience in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment**, but by the adoption of our **agitator** tosses and tumbles the garment through a **whirlpool of water**, thus **forcing the water through the finest or coarsest fabrics**, causing the clothes to become **ABSOLUTELY CLEAN**, without boiling or scrubbing, without wear or tear, and without the use of chemicals.

SPECIAL OFFER FOR FOREIGN MARKETS ONLY:

\$22.75 Upon receipt of **Twenty-two Dollars and Seventy-five Cents** in U. S. gold, or its equivalent, we will box, ready for steamer, and deliver F. O. B. cars at New York City, **One of Each (Four in All), "1900," "1900 Junior," "Domestic" and "Home" "1900" BALL-BEARING WASHING MACHINES**. Weight of the four machines, boxed, 300 pounds.

To facilitate our increasing export trade we desire to communicate with one responsible business house in each trade center of the world.

Tens of thousands of the "1900" Washing Machines have been sold in the United States, as well as in all parts of the world. Many of our agents at home are making over \$200 per month. Live men in your vicinity can do as well.

Orders received direct or through export houses; when ordering through the latter, to avoid errors, please mail us duplicate of order. Our Illustrated Catalogue mailed postpaid.

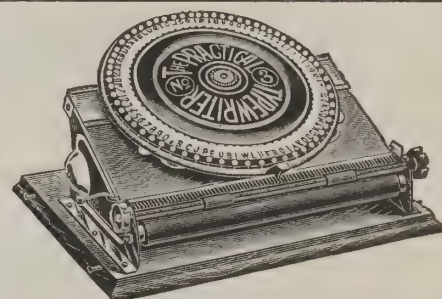
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Can be learned in fifteen minutes; has 84 characters as follows:

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Foreign typeplates on order for \$2.50 extra.

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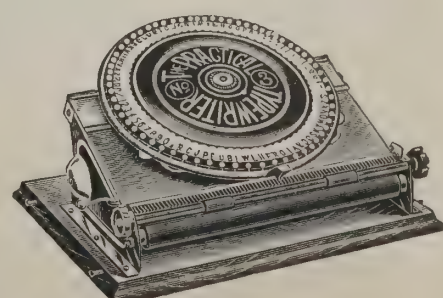
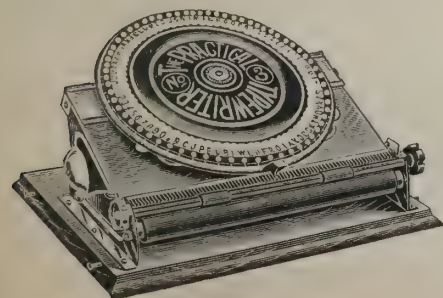
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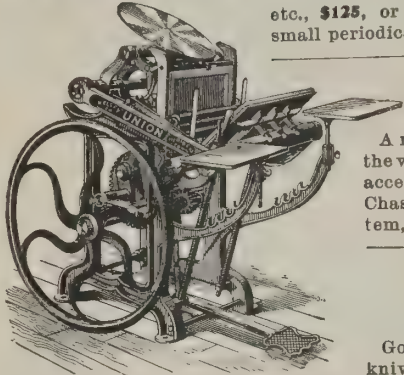


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Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., \$40.00.

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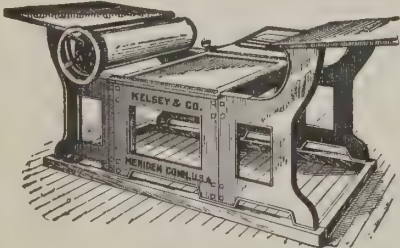


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Good hand machine with 24-inch steel knives, \$12.00.



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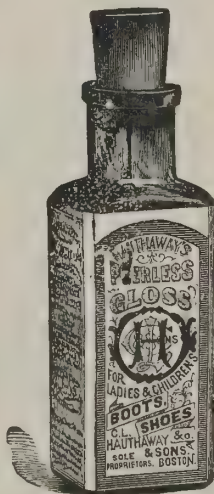
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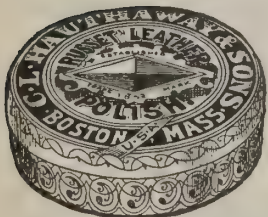
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The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

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Weight, 600 lbs. Measurements: 18x24x24 inches.

WHITE LILY WASHER CO.,

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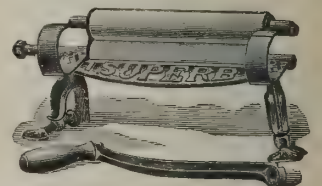
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ANCHOR BRAND CLOTHES WRINGERS, RAT and MOUSE TRAPS.



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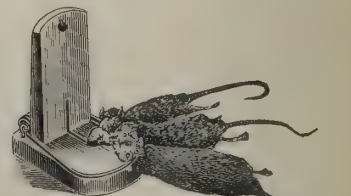
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Delusion
Mouse Trap.

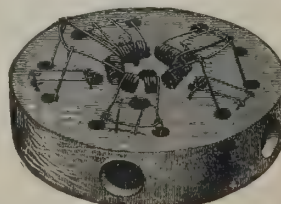


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Made in two sizes:
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small size for mice.



Erie Rat Trap.
Best Trap on Earth.

Requires no setting. **RAI TRAPS**—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch," "MOUSE TRAPS," "Delusion," "Mascotte," "Household," "Lovell's Metallic Choker," "Easy Setting Wood Choker," "Cyclone," "Yankee," "Rex" and "Sure Catch."



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Wringers
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and of Rat
and Mouse
Traps in both
English and
Spanish.



Lovell's Easy-Setting Metallic Mouse Trap.

Double Engine Traction

In THREE Sizes:

20 H. P.	-	Weight, 9½ Tons
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Boxing for Export will increase weight 20 per cent.

Hauling Capacity, - 15 to 25 Tons,
BESIDES FUEL AND WATER.

These Engines Always Give
Maximum Power.

They use
Wood,
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Straw
for fuel.



Where the reduced speed
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it, the Double Engine
walks right along.

Wheels (22 to 28 inch face)
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Special Wheels
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Boilers are of ample size.
With indifferent fuel under
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Engines on "belt-brake"
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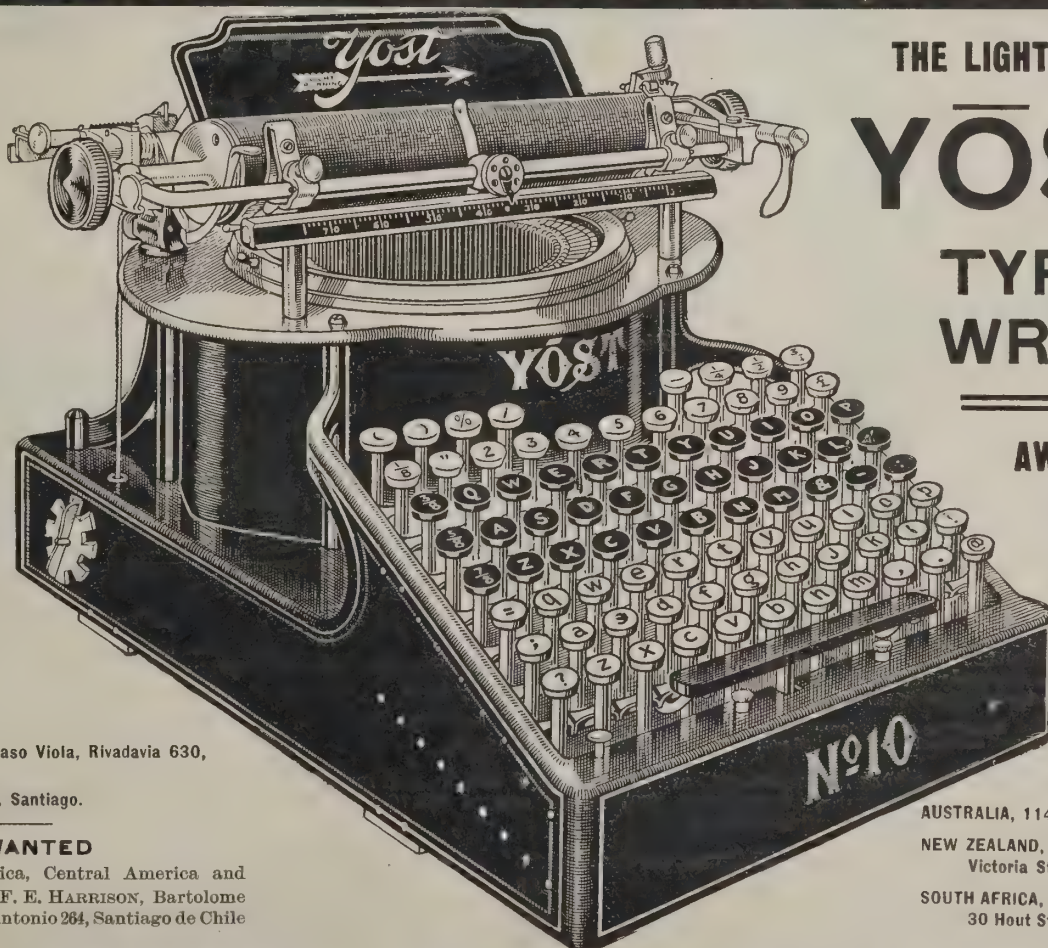
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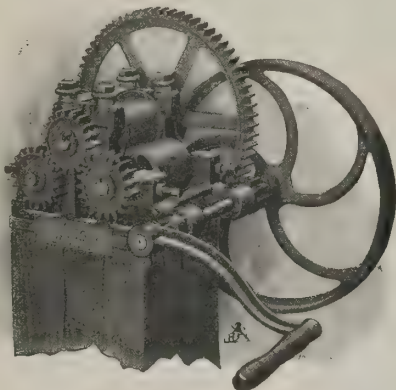
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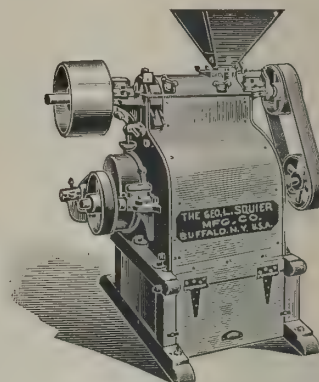
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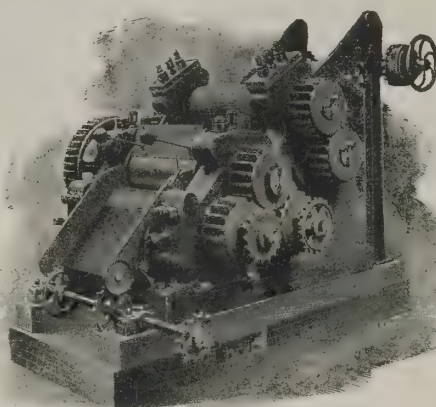


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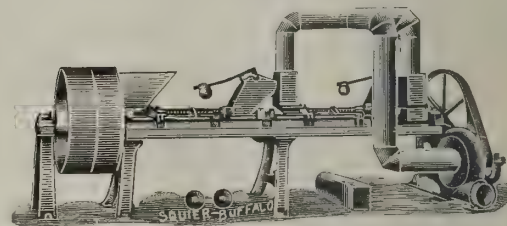
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Weight, boxed, 1,100 pounds [498.9 kilos]; 106 cubic feet [3,000 cubic decimeters].

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ALL PRICES 'quoted (U. S. gold or its equivalent) are for EXPORT ONLY, and include boxing, ready for steamer, delivered f. o. b. cars New York City. NOTE.—Each Game Board measures twenty-nine (29) inches square (53.16 centimeters); one dozen Game Boards, boxed for export, weigh 206 pounds (96.4 kilos), 13.76 cubic feet (0.3896 cubic meters).

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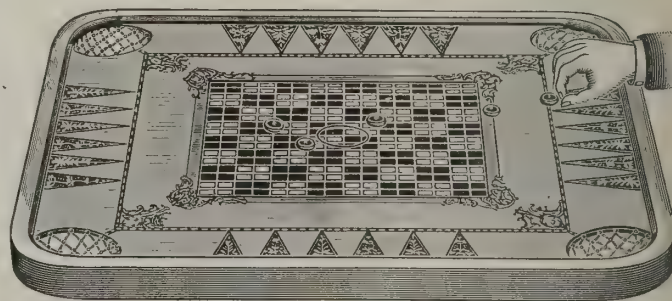
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De Luxe Combination Game Board.

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Orders received direct or through export commission houses. When ordering through the latter, to prevent errors, please mail us a duplicate of order.

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[Founded by ROOT & TINKER, 1877].

WITH WHICH IS INCORPORATED

THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by HOWARD LOCKWOOD & Co., 1877].

THE JOHN C. COCHRAN COMPANY, - - - Publishers
Bennett Building, New York.

EDWARD W. DREW, - - - Editor.

Published on the 1st of each month.

Subscription, to any part of the world, \$2.00, or an equivalent sum in any other currency. Single copies, 20 cents each. Advertising rates on application.

Entered at the New York Post Office as Second-class Matter.

WHY OUR GOODS SELL WELL.

THERE are many reasons why the export trade of the United States is increasing. Excellence of our manufactures is an important element in the growth of this branch of the country's trade, but the question of price also enters into the matter of expanding trade to a more material degree than is appreciated by our esteemed contemporaries of the daily press, both in America and abroad. The editors of these publications are prone to jump at conclusions and rarely analyze facts or seek reasons for their statements. Men who closely watch the trend of trade can supply the keynote to the great gains in our export sales in the sentence: "The days of high prices and great profits are gone." There was a time in America not so many generations ago when short-sighted men engaged in manufacturing would rather sell one article at a profit of \$100 than sell ten articles at a profit of \$10 each, although the total would be the same—\$100.

Men of that description have long since been relegated to the ranks of star performers in the bankruptcy courts. Their doom was forecast when there came into the mercantile world a class of men who were contented with moderate profits. Some of them figured that 10 per cent. net profit was enough. On that basis their prices were so much lower than their old-style rivals' that the public at first was distrustful, and it was harder to sell at the lower price than at the higher price to larger customers who wanted quality as well as cheapness. It was difficult to break the ice, but when the moderate-profit skaters had been at work for a time the surface of the smooth ice-covered pond of enormous individual profits melted away more quickly than does an iceberg under an equatorial sun.

The old-school manufacturers were without the large plants that were necessary to meet the terms of their new competitors who had made preparations to manufacture the larger quantities of goods at the lower prices and lesser individual profits. The evolution in some lines of industry occupied little time; in others prestige and good-will prevented an immediate adjustment of conditions, and in isolated cases the balance did not come for several years; but, like all of Nature's laws, this one of supply and demand, as between large and small profits, eventually adjusted business so as to conform to the new conditions. This readjustment has long since gone into full force and effect. The 10 per cent. basis has been cut practically to a 5 or 6 per cent. basis. American purchasers are getting the benefit of the reduction. Foreign purchasers also are able to buy our goods at the lower rates, and they are getting better articles at the lower prices, for improved methods of manufacturers have lowered prices without cheapening the quality of the products, so that the present-day American goods, whether sold at home or abroad, are of superior value and very much less costly than they were before the country took on

its present forceful and irresistible impetus which puts it in the foremost rank among the Powers of the world, in commerce, in war, in peace, in everything that may be for the good of the whole world. Selfishness is *not* an American characteristic. "Live and let live" is an old saying which Americans like to think is as much appreciated in other quarters of the globe as it is on the North American continent. The development of the world offers opportunities for the merchants of all nations. Our own merchants have no desire to secure more than their fair share of the globe's commerce. They are getting it now and their policy of good goods and reasonable prices is the chief reason for the rapid growth of both our domestic and our export trade.

AMERICA'S EXPANSION.

THE present executive government of the United States is founded upon the principle of expansion, which includes retention of the Philippines, although the basis of the existence of the Union was confined to a comparatively small portion of North America. The republic grew until it occupied a wide belt across the continent from the Atlantic to the Pacific Ocean. It was a long time before the Philippines became our colonies, and the acquisition was the ultimate result of accident, when traced directly to its source. The citizens of this country are disposed to permit the wisdom of future administrations to govern not only their own territory, but to decide the ultimate fate of the territories beyond the seas. The Philippines are American possessions "until the Filipinos can govern themselves"—whenever that may happen—and it seems a long time away, judging by Spain's experience and our own. The archipelago is an important commercial point in the Far East, and its future is an interesting problem. The subject comes up in interesting form in a speech recently made by United States Senator Proctor, which will interest the citizens of other countries than our own:

"The government of a people or country by another people or country not contiguous is at the best experimental and temporary. Such a condition may last a long time, but it cannot be permanent. With training and development it is the God-given human nature of all people to wish to govern themselves, and not owe allegiance across the sea. We shall make some mistakes, for we are human, but I believe we shall so carry ourselves that the world will be better for our having assumed these colonial responsibilities. Go slow should be, and I believe will be, our policy in the new field. If I could make the future geography of the American Union I might be a little uncertain about the northern boundary—whether to make it Canada or the Arctic Ocean; preferably the latter in God's good time. Franklin said in 1783 it must come some time, and he was a wise man. But the other lines would be fixed—East by the Atlantic, West by the Pacific and South by the Republic of Mexico and the Gulf. And within these boundaries may the future government of our country remain, its executive, legislative and judiciary and the voting population that makes that government."

Senator Proctor is an eminent statesman, and his opinion on any subject is valuable, but he is not likely to succeed in doing anything to retard the spread of American commerce, nor is he to be suspected of such an intention. We quote what he says chiefly because there is a chord in his peroration that will interest thousands of readers of THE AMERICAN EXPORTER in a sympathetic and sentimental way.

REPORTS are again conflicting as we close this issue of THE AMERICAN EXPORTER, regarding the outcome of the dispute between Russia and Japan. The feeling here is that the difficulty will be adjusted without war, although it must be confessed that some of the reports are of an alarming tenor.

CONSULAR reports from Germany indicate that the crisis in industrial values in that country has apparently subsided, and that the general recovery has every outward indication of being permanent. The effect will unquestionably be beneficial to American trade with Germany.

SOUTH AFRICA'S FUTURE.

FOR no section of the globe does the new year hold out brighter hopes than for South Africa. Recovering not so recently from an ugly war, which paralyzed its industries and closed its mines, the country has taken on a new era of industrial prosperity. The Boer war has been a blessing in disguise, perhaps. Until the war occurred South Africa was chiefly noted for her diamond mines and her broad expanses of grazing land. Her agriculture, as we understand it in the United States, was chiefly remarkable for its paucity. Agricultural implements of modern make were used by few of the farmers, and practically no attempt was made to obtain from the fertile country the dividends of produce that Nature was only too anxious to declare. The war sent into the country new men, fighters in peace when war was no more—men who knew things, men who were anxious to accomplish something, men who would just as soon raise a finer field of wheat than their neighbors if there was no other way of showing their superiority. Some of these newcomers were men who believed in iron and steel; if they could not have the metal in cannons and rifles, would use it in agricultural machinery. An old correspondent of *THE AMERICAN EXPORTER*, writing to us recently, declares that he can hardly realize the extent of the revolution that has followed the war. New men, new methods and improved machinery have given an impetus to the country that seems to him to be "almost unreal." Our correspondent encloses an editorial printed in *Industries*, a Durban newspaper, from which the following extracts are printed, as marked by our correspondent:

"As the Chinese labor question may be now considered practically settled, we can, therefore, turn our thoughts in another direction, and consider the best method of restoring—in fact, creating—the future prosperity of South Africa. For apart from gold and diamonds, South Africa has not yet produced anything of note worthy of the name of exports. It has been virtually a land of samples in the past, a little wool, wine, hides and coal, nothing else of importance, save perhaps ostrich feathers. We have, in fact, to look to entire strangers for part of our daily bread—we are, indeed, very young. Now, all this comes of depending so much on gold and diamonds, and it is very evident South Africa cannot live on the proceeds of these precious metals alone; she must have something more abiding and more substantial on which to rear her young progeny. We have the land, as fertile land as in any other part of the globe; we have the water running naturally in many places, and capable of being conserved in dams, where it does not already occur in rivers and lakes; we have an equable climate, suitable for the cultivation of all kinds of crops, from wheat, potatoes and mealies, to grapes, oranges and pomegranates. In short, all nature is smiling, 'every prospect pleases, and only man is vile' in his inherent idleness and indolence.

"One can pity the poor native because he knows no better than to bask in the sun, and expect his better-half to do all there is to be done in the shape of labor; one can also understand the past indifference of the Dutch population—the pioneers of the vast sub-Continent—who simply led a pastoral life dependent on the increase of their flocks and herds, in the days gone by; but we have no sympathy with our own countrymen, who came to South Africa, found it a howling wilderness, an uncultivated expanse of beautiful country, a land flowing with milk and honey, corn and wine in prospective, and are content to leave it so, merely rushing after the gold and diamonds and precious metals, and utterly neglecting these weightier matters of the law of life."

Industries goes on to detail the changes that have occurred, and points out the fact that the new order of things is increasing the demand for agricultural machinery. Its editor believes that real prosperity has come at last to the lower portion of the Dark Continent, and from all reports that we have lately received he is undoubtedly correct; but it must not be forgotten that American manufacturers of agricultural implements can make substantial claim to a considerable portion of the credit for South Africa's improved condition since the war, and it is certain that they will have much to do with the country's future prosperity. As in other fields, American enterprise is much in evidence in South Africa.

OUR CONSULAR SERVICE.

THE National Business League, of Chicago, U. S. A., is prosecuting a vigorous campaign for a reorganization of the consular service of the United States, supporting Senator Lodge's bill, or a measure based on similar lines. The chief points of the Lodge bill are given below, as they are of general interest to our foreign readers who come in contact with the official representatives of our Government, and as they show the tendency of American sentiment in promoting amicable trade and other relations with the inhabitants of the remainder of the earth:

1. Abolishment of fees as compensation to consuls, except as to consular agents, and the substitution of fixed salaries.
2. Improved classification of consular officers.
3. Adoption of the "merit system" in the selection of consuls.
4. Consuls must be familiar with either the French, German or Spanish, as well as the English, language, possess a knowledge of the commercial resources and requirements of the United States and the countries to which they are accredited.
5. Consuls shall be eligible for promotion.
6. Tenure of office to continue only during efficiency and conduct of the highest grade.

The Lodge bill has our hearty and unqualified approval. Its tendency is to place our consular service upon an improved and a higher basis than it is at present, although it is now wonderfully efficient and is doing a vast amount of good for the country and its merchants. In recent years the political element has been minimized in its influence, but it is true that some incumbents have managed to evade the restrictions which custom now throws around these appointments. Some of our consuls are underpaid, considering the great interest they take in their duties. Others, perhaps, may be overpaid, but we doubt if any official in the United States consular service is derelict in the important duty of giving his best energies to the advancement of our trade and commerce. There may be exceptions where the official does not direct his efforts as intelligently and efficiently as the majority, but on the whole it is a marvelously efficient machine of the Government. In the proposed reorganization we cannot see how anybody will suffer, except, perhaps, the one or two or three who may be exceptions to the general rule. Even in their cases, if they take advantage of the exploitation of public sentiment, they may survive and become more useful members of the corps.

Our acquaintance with the consular representatives of the United States extends over a quarter of a century, and we doubt if any country has ever had a more generally capable lot of foreign representatives. The consular service of other countries has improved as years have passed, but the American seems also always to have been getting better. The reorganization will make the service more useful than ever before, for it will place the present capable officials upon a civil service basis, and will benefit them otherwise in many ways. In this connection we think it proper to say that in our efforts to advance American commerce abroad we have always had the hearty support of the official commercial representatives of our Government, and we feel deeply indebted to them for their courteous and painstaking action upon requests which have often required considerable labor and trouble, without much more than the knowledge of appreciation and a sense of a conscientious fulfilment of duty to reward them. We sincerely hope that the Congress will see the consular service measure in the same light that it is viewed by the manufacturers engaged in the export trade and by ourselves, and place the corps upon a better and more satisfactory basis.

THE agitation by Mr. Chamberlain in favor of preferential treatment of the industries of the British Empire is beginning to have its effect, according to recent cable advices. A recent case in point is the acceptance by the Corporation of Swansea of a British tender for the extension of the tramway system involving an expense of £103,000, although a German company offered to do the work for £2,000 less. Other preferences of the same sort are reported, but so far as we have heard the American trade with Great Britain has not been affected.

THE LIGHT OF THE FUTURE.

IT is within the memory of men who are not yet aged that wax and tallow candles were universally used for illumination. The brighter gaslight and kerosene lamps came afterward and sounded the doom that has since come to the candles, except in localities where there were so few inhabitants that gas could not be produced with commercial propriety. Next came the electric light, first in crude form, but now in such perfected state that it is better and cheaper than gas. In modern American cities gas is becoming more and more of use only as fuel, for the electric light is more satisfactory, and in many cities less costly by comparison. Business men have long used electricity for illumination, but it is only comparatively recently that families in dwellings have been permitted to enjoy the advantages of the new system. In some American cities the introduction of the new method of lighting has been carried to the same extent that gas is supplied, and we have in mind a case that indicates the progress made in this direction.

A family living in an American city in the thirty days ending in the middle of January, 1903, paid a gas bill amounting to \$9.30, the gas being used for illumination and cooking. In the corresponding period, in 1904, the same family paid \$5.40 for both electricity and gas, using the former for lighting and the latter both for cooking and partial illumination, supplementary to the electric light. The gas was sold at \$1 per 1,000 feet. The electric light was used freely, incandescent bulbs of 16 and 32 candle-power being part of the equipment. The illumination was 200 per cent. better and the expense was in inverse ratio.

The advances made in electric lighting are marvelous when a person pauses for a moment to think upon the history of the discovery and the advances that have been made in its development. As seen in some American cities this method of lighting has well-nigh reached the limit of adaptability from every point of view. What, then, have we to expect in the future? As gas supplanted the candle, as electric lights are superseding gas, may we not expect some new form of illumination more brilliant than even the present form of lighting? Where will it come from? Who will invent it? What will it be like? Those who study the world's progress in these years of wonders feel that it will come, in fact, that it must come. They do not like to speculate upon the subject—it is too vague, too problematical.

On another page we print an account taken from a contemporary regarding experiments made in the city of Philadelphia in the matter of radiation of light from the human body and the possibility of using it in the manner that X-rays have been used to make photographs. It is an attractive subject for discussion, but we shrink from saying more about its possibilities than that its realization might seem to be no more wonderful than thousands of emanations from the brain which guides the actions of the human body and perhaps no more astonishing than electric lights would be to our forefathers if they could return to note the great changes that have been made for utility and comfort in the world since they ceased to share in its sorrows and its joys.

Thomas A. Edison, the wizard of Menlo Park, whose electric inventions have astonished the world and who has done more than any other man to put electricity upon a commercial basis, may be the father of the new light. In saying so we do not ignore the important achievement of Peter Cooper Hewitt in discovering his now famous vacuum light, nor do we forget the equally valuable researches of Charles P. Steinmetz, both Americans, who have apparently succeeded in eliminating the injurious rays from the electric light. Up to the present time these lights have not made much progress in supplanting ordinary electricity, nor can they do so where colors must be distinguished, as we understand the situation. We are not discrediting either Mr. Hewitt or Mr. Steinmetz in what we say, but we doubt if their discoveries will ever fully supplant the present commercial electric light. Both will be found useful for many purposes, but neither is likely to be the light of the future. Either of these inventors may discover something new and marvelous. It is believed, however, that Mr. Edison is now doing more discovering in that line. Recently when asked

by the editor of THE AMERICAN EXPORTER for his opinion upon the subject of light, he wrote tersely and epigrammatically a note not intended for publication which seemed to show that he had given the subject consideration.

Mr. Edison is a man of few words, but of many ideas. He is a man of achievements, rather than promises. It is evident that he is at work upon the light of the future, but he is not likely to take anybody into his confidence until he has found a practical solution of what is one of the most fascinating scientific and commercial problems of the twentieth century.

LESSON OF PEARY'S QUEST.

THE quest of the North Pole, so far as we can see at the present time, is of no commercial value, and is only of scientific interest, but it is, nevertheless, a fact that the sentimental feeling of wishing to have an American make the discovery is responsible for a widespread support in this country of the renewed effort which Commander Peary, of the United States Navy, will make to reach the hitherto inaccessible location. Everybody in America wants Commander Peary to find the North Pole, but not a soul has yet suggested what he shall do with it when he makes the capture. Perhaps he can cut it down, as if it were a tree, and exhibit it at some world's fair, but, levity aside, the chief deduction to be derived from the enthusiasm Peary arouses is the knowledge that his support comes largely from persons who are enthusiastically in favor of making progress that will benefit America and the remainder of the world, even if the results are only scientific and not tangible from a commercial point of observation. Our esteemed contemporary, the *Chicago Inter-Ocean*, says:

"Everybody will be glad if Commander Peary's next dash to the North is successful. We all want him to capture the prize, and, of course, we want him to capture it in the name of the United States. Scientifically speaking, the capture of the pole will be one of the greatest achievements of the age, and it would be a shame if any other nation should capture it first; but once captured it will be, commercially speaking, a weight on our hands. If it were closer to our throbbing heart of industry we might use it in our business, but there are insurmountable difficulties in the way of utilizing it as a refrigerating plant, at least until our territory and our trade shall expand to such an extent that we shall be compelled to establish reserve stock cold-storage warehouses within the arctic circle."

It is interesting in this connection to recall that in his lecture before the Royal Geographical Society, in London, in November last, Commander Peary spoke of the North Pole as the northern zenith of the nation's destiny and the Panama Canal as the southern boundary. No such restrictions can be placed upon the extent of American influence. Since the arctic explorer delivered his address important developments have occurred in the South, and in the language of the sage of Barneget Bay, "it is up to" Commander Peary to make the North Pole as much of a reality as American diplomacy has insured the immediate construction of the great waterway that will soon connect the Atlantic and the Pacific oceans through the center of the western hemisphere.

TRADE follows the flag, say the believers of expansion in every government, and to a considerable extent the axiom is true. We are surprised, however, to learn from the *Petit Parisien* that although Russia and France have enjoyed the closest diplomatic relations the trade between the two countries has been in inverse ratio. The *Petit Parisien* points out that the exchange of produce between the two countries barely exceeds \$50,000,000 a year, against \$200,000,000 between Germany and Russia, and \$120,000,000 a year between Great Britain and Russia. But more than this, it is stated that France sells her ally only a quarter as much as she buys of her. Our Paris contemporary is much concerned about the discrepancy, but in America we are not worried about it, for both the French and Russians are showing an increased appreciation of the worth of the goods we have to sell to them.

KING SEES AMERICAN WORTH.

WHILE little commercial significance can be attached to the fact, it is worth mentioning that the King of Italy has recognized and honored American journalism by making Col. Melville E. Stone, of New York, a grand commander of the Order of St. Maurice and Lazarus. This elevates Colonel Stone to the rank of a knight, and confers upon him the title of Sir. Sir Melville E. Stone is practically the head of the Associated Press in America and has reduced news-gathering to a systematic and business basis, covering the entire globe. The American Associated Press is an important element in the world's progress. The men at the head of it recognize that trade and commerce are great factors in international relations, and more than ever before have they given careful attention to this phase of human activity since Colonel Stone has been the chief directing agent of the great institution. The recognition which Colonel Stone receives from the King of Italy is doubtless a very pleasant personal compliment to the active and forceful manager of the Associated Press, but it is no less a recognition of the wonderful progress that has been made in the newspaper industry in the New World.

Our foreign readers may wonder that Colonel Stone should be honored in this way. For their benefit it may be said that he occupies a position which in a business way can be compared only to that which the President of the United States occupies in a political sense. In an executive way the two positions are very much alike. The President administers the affairs of the nation as a whole, but he has no power of interference with the domestic affairs of the several States which form the Union, so far as they do not violate national laws enacted by the Congress. The general manager of the Associated Press in the same way supervises the news-gathering of the entire country, and his association furnishes thousands of daily newspapers with the news of the events that are happening not only at home, but abroad. Like the President, he has great power, but he cannot interfere with the policy, political or otherwise, of any one of the thousands of papers forming the great press association which he manages. To go further, the President has his ambassadors, consul-generals, consuls and commercial agents at all points where they are needed throughout the world, and the general manager of the Associated Press has his correspondents at the same points. As to various details which would not interest our readers, the comparison could be carried much further.

All of the great newspapers of America, with a single exception, are members of the Associated Press, so that the responsibility of seeing that they are properly served with news is a very serious matter. There are about 8,000 newspapers that depend in a major or minor degree on the Associated Press for news. Many of them supplement the service with the news that their own correspondents secure and the many other sources of information which are open to enterprising American publishers are not neglected, the latter including the Publishers' Press Association and the New York *Sun's* telegraph news bureau, both of which are important elements in American newspaperdom. Our purpose at this time is not to give a directory of press associations, nor to make comparisons, but rather to point out the progress made by the Associated Press under Colonel Stone. There was a time when the change in the management of a big railroad, the exportation of an important consignment to Australia, the state of trade in Great Britain, a fresh discovery of chemical and commercial value in Germany would have received scant attention, while some piece of criminal news of no worth in making the world better would be given undue prominence. Colonel Stone has not entirely cut out the bad features of life everywhere, but he has so managed his service that the good receives its full fair share of attention. The murder stories sent over the wires are shorter; the accounts of events that will be of benefit to mankind are longer, better and more comprehensive than ever before. Considering the vast and complicated machinery under his direction, Colonel Stone is entitled to more honors than the one just given to him by the King of Italy.

It would require more space than we can spare to print more than a hint of the wonderful progress made by American newspapers. Some rough idea may be acquired by the statement made on the authority of a prominent telegraph official that American newspapers, taken altogether, spend very close to two million dollars a week for telegraph and cable tolls.

EDUCATION AND PATRIOTISM.

THE New York *Evening Post* prints some interesting observations in connection with the recent visit of British experts to study our educational system, which is unquestionably one of the chief factors in American progress. In America absolute perfection is not claimed for everybody and everything. If that state were reached there would be nothing more to be done. The *Post* in its comments strikes a vein that is of human as well as of commercial interest, for the thought applies to grown people as well as to children. There is a frankness about the observations of the editor of the *Post* that is both naive and characteristic. He says:

"We and our visitors, however, often forget that the success of the American schools is due less to mere machinery than to the temper of the common people and the spirit of our Government. Some of the most highly cultivated men whom America has produced have graduated from the little crossroads district school, taught by young men who had mastered nothing more than the three Rs, or from colleges whose equipment half a century ago would to-day be regarded as inadequate for a village high school. The truth is that our population justly holds knowledge to be power, and is bound to get an education, with good schools or without them.

"The schools are far from perfect; they are, as President Eliot and others have pointed out, often wasteful and mechanical. We put huge classes through all grades at the pace of the slowest third, with little provision for developing and advancing the brighter third, for breaking the lockstep. Our grammar and high school masters are, as a class, men somewhat lacking in ambition and energy. These and other faults are apparent on the surface. But were our schools much inferior our boys would still crowd ahead and make their way.

"The real underlying cause is our free institutions. To say this is to seem guilty of Fourth of July rhetoric, of making the eagle scream; but exaggeration is scarcely possible in describing the stimulus of liberty. Americans who have lived more in Europe than at home talk languidly about the failure of democratic government. But no man who has seen that line of State universities—Michigan, Wisconsin, Nebraska and so on to California—no man who has heard the surge of our Western beaches, can deny that the same spirit of liberty which was displayed in the Revolution is the most potent factor in American progress to-day. The prospect of mounting from the very gutter to the proudest place in the professions, in politics, in literature, has fired every boy and girl who has a spark of ambition, and has made our schools, though deficient at many points, the best in the world, because they are the visible sign and opportunity of the 'career open to talent.'"

The editor of the *Post* might have added some comment in line with a recent editorial in THE AMERICAN EXPORTER, when we wrote about the spirit and ambition which actuate the average young American in excelling in practical mechanics, but the general tenor of the editorial is so truly American that for only American readers it might have been superfluous to have said more than we have quoted.

RATIFICATION of the new treaty with China was an important event of the month just closed. The President of the United States has acted with his usual promptness in naming consuls for the Manchurian posts and the men he has named are particularly well fitted for the duties which they will have to perform.

THE Colombian excitement over the Panama Canal seems to be subsiding, and it is only a question of a short time before the little republic will cease to worry its new sister of Central America.

BATTLE OF GIANT FORCES.

Crucial Tests in Progress Between the New "Prime Mover" and the Reciprocating Engine.

FOLLOWING up the particulars published in THE AMERICAN EXPORTER regarding the Cunard Steamship Company's duty tests to show the relative value of turbine and reciprocating steam engines, a writer in the New York *Herald* has gathered some additional information of interest to everybody who uses steam for power purposes. The writer says: "The remarkable interest manifested at this time is due to three recent developments involving the turbine type of prime mover, but all of which are, curiously enough, commercial rather than mechanical."

The first of the series of events to claim attention was the organization of a number of British experts who formed the Cunard Turbine Commission, the object of which was to determine the economy and endurance of the new system when compared with the reciprocating engine. The commission has just now entered upon its final duties, and is making exhaustive tests with the new mode of marine propulsion.

Next to this the importance and far-reaching utility of the turbine was again brought out vividly when the award was made by the New York Central Railroad to the General Electric Company for a complete turbine equipment with which to operate the electric generators employed in the traction system through the tunnel and on the Mott Haven division in New York City. The third instance was the announcement that the Westinghouse Company has acquired the rights to manufacture in the United States and Canada the Parsons steam turbine.

To return to the Cunard Turbine Commission and its tests for securing data upon which to base its findings, favorable or derogatory, as the case may be, it was necessary for it to obtain two vessels, one equipped with reciprocating engines and the other with steam turbines, but in all other respects the two steamships would have to be practically alike.

These specific requirements were due to the fact that with steamships there is no measurable amount of work done, as there is in generating electricity, and so a relative comparison of steam consumption in propelling both types of ships at the same speed and equal draught displacements becomes necessary. The commissioners were enabled to obtain two ideal vessels of the opposite types, built by William Denny & Bros., the shipbuilders of Dumbarton, who placed at their disposal the *Arundel*, a twin-screw steamship, and the *Brighton*, a turbine steamship.

These vessels are regarded by their makers as perfect representatives of their respective types, and were constructed after models which were experimented with in the company's tanks. This was done with a view of obtaining the maximum economy of propulsion with the minimum dimensions, and the ships differ from each other only in details of construction, in order that the varying conditions imposed might be fulfilled in the most practical manner.

In the *Brighton* the propelling machinery consists of three sets of turbines, manufactured by the Parsons Marine Steam Turbine Company, supplied with steam from boilers of the Scotch type. The arrangement of the turbines is three shafts with five propellers, the center shaft being fitted with one propeller and the two side shafts with two propellers each. When maneuvering the vessel the center shaft runs free and the two side shafts take the place of the ordinary twin screws, and, as has been demonstrated, the power of maneuvering is in every respect as good as in ordinary twin screws, while in going astern there is none of that objectionable vibration which is felt even in the most modern twin-screw arrangement.

The *Arundel*, on the other hand, is fitted with balanced twin triple expansion engines of the reciprocating type of the most improved design and of such size as to practically consume all the steam the existing boilers can make, so that her displacement is slightly increased by carrying the extra weight entailed by the heavier triple engines, as compared with turbines.

The *Herald* writer further says that the American inventor of the turbines used in the new type of vessels has given some interesting data relating to the economy of turbines at low powers. In this the reciprocating engine has its sole advantage—it may run as slowly as desired, with a minimum sacrifice of economy. The Clyde steamships for carrying passengers are always run at or near full power, and so there is no need to study the question of economy at low powers, but when their application was considered in reference to war vessels, most of whose service was performed at cruising speed, when the power exerted was perhaps only one-tenth of that at full speed, then this question of economy at lower powers became one of vital importance.

Arrangements have already been made to solve this difficult problem in several different ways. For instance, the turbine equipment of a war vessel might be made up of a number of small units, and Mr. Parsons is of the opinion that by this and other means turbines may be operated as economically—probably much more economically—than ordinary reciprocating engines at the same low power, while at high speed the turbines would have an advantage of from 20 to 40 per cent.

While the Cunard commission was doing its work in England a board of experts had been appointed by the Government of this country to determine the efficiency of the steam turbine for the navy. The former commission is still at work, while the home board has already sent in its recommendations. Both the Parsons and Curtis turbines were thoroughly investigated, and, while the report was favorable to the new engine, their conclusions were diplo-

matically stated in their reports and merely prescribed a trial of the turbine on a limited number of vessels.

Up to the present time, says the *Herald*, the United States has led the world in the utilization of the turbine for stationary power plants, and England has been in the lead in the application of turbines to the marine service; now it has taken another initiative and is equipping a torpedo boat—the *Amethyst*—with turbines capable of developing 9,800 horse-power.

Mr. Westinghouse, whose company controls the marine, as well as the stationary turbine rights to manufacture the Parsons invention in this country, recently said that a great marine turbine industry would be built up in the United States for all classes of ships.

The only field where it is likely the steam turbine will not directly succeed the reciprocating engine is on the railroad, but electric motors operated by stationary turbo-generators are so rapidly taking the place of steam locomotives that in another generation the last railroad engine may be coveted by the British Museum, to take its place by the side of Stephenson's famous old Rocket.

The New Treaty with China.

THE commercial treaty signed last month by and between the United States and China was an important step on the part of both nations toward expanding commerce in the Far East. The treaty had been hanging fire for so long a time that when the ratifications were made there was more or less of a surprise in diplomatic and commercial circles. The treaty provides among other things for the opening to foreign trade of the Manchurian ports of Mukden and An-tung, and it went into full force and effect on January 13th through its promulgation by President Roosevelt, following a quickly arranged exchange of ratifications at the State Department.

The assurances given by Russia that she would respect the interests of foreign nations in Manchuria make stronger the position of the United States, but there was a feeling here that had war been begun between Russia and Japan before the new treaty went into effect it might have been contended by Russia that her assurances applied only to such agreements with respect to Manchuria as were in operation before hostilities began. The American Government was, therefore, very much relieved to have been able to make the treaty with China operative last month.

The treaty has been nearly a year and a half in negotiation. It principally relates to commerce and navigation, but it covers several other important subjects. The provision which opens two new localities in Manchuria to foreign trade is of the more interest. American consuls have already been appointed, and other nations will take advantage of the situation to send their representatives to the two ports—An-tung and Ta-tung Kou. It all means an increase of commerce in the Far East.

Commercialism of the Right Kind.

OSCAR S. STRAUS, president of the New York Board of Trade, at its banquet last week in New York City, said some things that are worth repeating: "There never was a time in the history of any nation when a larger responsibility and a larger duty rested upon those who are engaged in commercial pursuits than in this the opening of the twentieth century, in this age and in this the country of commercial expansion and industrial development. And, thank God, there never was a people better equipped to carry forward this development in consonance with the broad and liberal spirit of human welfare and international good-will."

"We are proud to be a commercial nation and to carry the banner of that noble form of commercialism that stands for the spirit of mutuality and for human welfare, that blesses the nations that send and that receive the products of our fields, factories and furnace, our locomotives, our sewing-machines and our grain."

"A commercialism that stands for the open door in China and for an open canal at Panama, which shall lessen by thousands of miles the distance between the great commerce-bearing oceans; a commercialism that seeks its triumphs not at the cannon's mouth, but along the highways of peace, through a world-wide expansion of a world-blessing commerce."

Mr. Straus is a prominent business man of New York City and was appointed United States Minister to Turkey in 1887, serving for a long time thereafter. His interest in our expansion of trade abroad makes his utterances of interest as coming from a patriotic American.

New Use for Gas Engines.—The city of Philadelphia, U. S. A., has recently established a \$250,000 pump house near the center of the city, the idea being to supply increased water pressure during fires. The pumps will replace forty steam fire engines and will reduce insurance rates 25 cents for \$100. The selection of gas engines for motive power is novel, but is believed to be justified in view of the perfection of the modern gas engine, as regards reliability and freedom from break-down. The great advantage incident to the use of gas and hot-air engines are their economy during periods of idleness, as compared with steam plants, and the ability to start up immediately and at full power.

The Venezuelan Decision.—In our last issue it was stated that the Venezuelan arbitration case was expected to be decided February 1st. The tribunal, however, has postponed action until February 26th.

PHOTOS BY HUMAN X-RAYS.

Development of an American Discovery Which Has Astonished Scientists.

IN a previous issue of THE AMERICAN EXPORTER we made some reference to the discoveries of Dr. Arthur Goodspeed, of the University of Pennsylvania, U. S. A., in the direction of obtaining photographs in a new way. The Brooklyn *Eagle*, which has investigated the matter, makes report of the development of the discovery, substantially as quoted below. The *Eagle* declares that by a series of interesting experiments in secondary radiation, Dr. Goodspeed has established beyond peradventure that nearly all material objects are capable, under certain conditions, of giving off rays of light of their own, and notably that from the human body there may emanate rays of such quality that photographs can be taken by them. Now, this does not mean, as a Philadelphia paper put it, a discovery that will make "every man his own electric light" in future. In the first place, these rays only develop under certain conditions, and in the second place they are rays not of optical, but of physical, light and invisible to the human eye, though capable of making their record on the sensitive film of a photographic plate.

The certain conditions are such as to preclude every man's being his own electric light, even if the rays given off were of visible, optical light. These new rays are only given off by objects that are within the influence of X-rays, and, consequently, in order to develop them every man would have to carry a Crookes tube around with him and all the apparatus necessary to the production of the Roentgen rays. It is not that such bodies develop X-rays of their own, but that being in the path of X-rays develops in them a certain activity which communicates itself to the surrounding ether in new rays of yet other character.

Dr. Goodspeed was the first man in America to experiment with Roentgen rays, though ignorant of the nature of the effect at this time, and he was thoroughly familiar with all the recorded experiments. Summing up, Dr. Goodspeed says:

"It has been shown possible to produce secondary radiograms on a sensitized film, enclosed in a perfectly dark receptacle, by means of absolutely invisible emanations coming from various articles, including the human body, which have been excited by X-rays generated within a black box in a perfectly dark room.

"This apparently startling conclusion loses much of its mystery when we contemplate that it is entirely proved at the present time that only about 2 per cent. of the radiant energy that comes to us from the sun is capable of affecting the human eye. That bodies on the earth, therefore, while bathed in a portion of the other 98 per cent., may be capable of diffusing some of it is what any thoughtful person will admit.

"Naturally, the most favorable place to get some of the 98 per cent. without the visible 2 per cent. is in a dark room. Of course, I use the word 'dark' only as applied to the human eye. It is quite possible—to my mind entirely probable—that a mouse and very likely a cat could, if it had proper intelligence, give us valuable assistance in rooms to us totally dark, which are doubtless to them comfortably illuminated.

"All matter absorbs energy in waves of varying length and gives it off in waves of a different length. The human body gives out the rays or waves of the energy of comparative freedom. Animals may doubtless see a light invisible to man, while in a light in which man sees readily the animal would be blind."

This human light radiated under the influence of X-rays in sufficient intensity to leave its record on a photographic film is under ordinary circumstances invisible to the human eye. Yet Dr. Goodspeed tells in recording one of his experiments how the sensitive screen exposed only to this light became distinctly luminous to his eye when he had looked at it through a brass tube for ten or fifteen minutes until his eye, glued to the end of the tube, had become sufficiently sensitive through the absolute exclusion of all other light. What was visible, however, was a fluorescence produced on the screen by the impact of the secondary radiation upon its surface.

Unique Egg-Hatching Machine.

AMAN engaged in the poultry business in the United States thinks that he comes close to winning a medal for beating the world in his avocation.

Some account of it may interest readers who are not in the poultry business. The man, whose name is W. P. Hall, has just completed his fourth mammoth incubator. Its capacity surpasses anything in the way of an incubator, or "wooden hen," yet built by man. The machine holds 7,500 eggs; it is 51 feet long by 4 feet 4 inches wide; it has fifty compartments, each 25 inches square, and each compartment has two trays. Each tray holds seventy-five eggs.

Most incubators are heated by oil lamps, but this one has a little stove to maintain its temperature at the required point. A hot-water heater stands at one end of the machine; it is about three feet high and burns pea coal. All the attention it requires is a shake and feeding of coal in the morning and evening, for it is so designed that its apparatus regulates the heat sent into the incubator. A throttle arrangement shuts off the fire when it becomes too vigorous, opening the cold air draught at the same time and thus maintaining an even temperature.

Every feature of the hatching process has been carefully studied out by

Mr. Hall, who has gone to the extent of providing for the animal heat generated in the eggs as the fertile eggs start to hatch. As the heat of the pipes is always at the same temperature, if provision were not made to care for the heat of the eggs as the chicks develop the entire hatch might be lost. Mr. Hall has recognized the importance of this matter. In the door of each compartment is a window. It is double glazed and hinged and held in place by a button. The egg trays of the various compartments rest on adjusters, which are double frames hinged by galvanizing arms or levers. In the bottom of each compartment under each tray adjuster are a series of holes that correspond in size to the pin of the adjuster frame. Each compartment has a thermometer, so that its temperature is accurately recorded.

As the heat of the compartment increases through the heat of the hatchable eggs the thermometer shows it, and then the trays are lowered on the adjuster frame. This is done by advancing the pin in the holes mentioned, each advance lowering the tray just so much, until finally when the eggs are about to hatch the tray rests on the bottom of the compartment. The first drop is made in about six days after the hatch is started, and all eggs placed in the incubator must be out by the close of the twenty-one days or they are adjudged worthless.

This incubator will take the place of about forty small machines, each heated by a kerosene oil lamp. Each lamp requiring about ten minutes' attention every morning, and the oil consumed in the hatching season costs about \$150. The big incubator, with its 7,500 eggs, does not require as much attention each day to its heating apparatus as one of the lamps of the smaller machines, and the percentage of its hatch will be fully as large, if not greater, for the atmosphere of the place when the incubator is operated will be much purer than if forty oil lamps were burning there, and pure air is one of the essential things in securing a good hatch of eggs.

In a hatching season, extending from March 1st to August 1st, this huge incubator will handle 52,500 eggs at least. If 75 per cent. hatch it will mean 39,375 young chickens. But so long as fertile eggs can be obtained this machine can be operated, and so the process of turning out young chickens at this wholesale rate may be extended the year around.

"Solium" Was a Great Scientific Hoax.

READERS of THE AMERICAN EXPORTER may have thought it strange at the time that no information was given to them about "solium," an alleged new element which a few months ago was heralded as being even more wonderful than radium. An eminent American scientist and electrician was consulted by the editor of this journal on the subject. He examined carefully the material offered and finally remarked: "If I were you I would not print a word about it *now*; it is either beyond all natural possibility or else it is a hoax." It turns out to be a hoax and the New York *Herald* gives an entertaining account of how the scientific world and many newspapers have been made the victims of a joker:

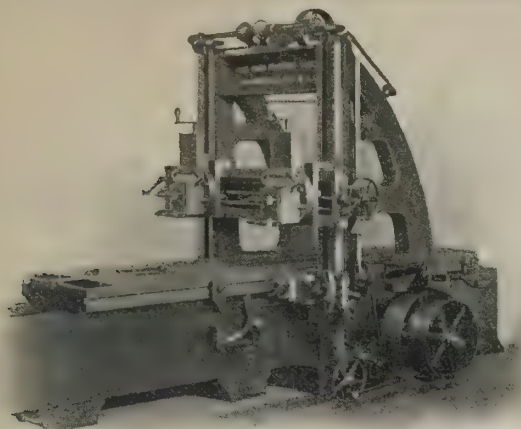
"After months of futile effort to discover traces of the alleged element known as 'solium' or 'selium,' which was described as possessing properties much more wonderful than those of radium, the scientific world has just awakened to the fact that it has been the victim of a hoax.

"It was at the time that the wonders of radium were being written about for the benefit of almost every class of publication, when discoveries in the field of radio-activity were being announced almost daily, that it was told that a hitherto unknown element had been found by an experimenter in Paris. Immediately much was written about this element which was named 'solium,' because, it was said, the light which it shed was in all respects the same as that which comes to this earth from the sun. An English authority, gravely discussing 'solium,' suggested that in all probability a discovery had been made which would furnish a rational explanation of the heat and the light of the sun.

"In France, Germany, Italy, England and in the United States scientists gave much attention to the new element. So rare was the substance that not an atom could be spared from the laboratory in which it was first separated from its surroundings for experiments elsewhere. But the method of its discovery was described, and the world was told how it might be found. The first reference to 'solium' was made in a long article published in the *Figaro* (Paris) and that journal from time to time told of the progress of the original experimenters with the remarkable element.

"Enthusiastic Americans searched the country over for a mineral from which 'solium' might be extracted. They were disappointed repeatedly, but being of great faith, they did not despair. Dr. George F. Kunz, who had been making a careful study of radium, was puzzled by the first report which came to him concerning 'solium.' The phenomenon described from Paris did not seem to him to be natural, and he was not one of those who spent much time searching for the new element in this country. Instead, he caused an investigation to be made, and he has just received word which confirms what he has believed all along to be the case, that there is no such element as 'solium.'"

Opening for Machinery in Australia.—The Canadian commercial agent at Sydney, New South Wales, reports the extraordinary success of artificial irrigation on comparatively small areas of land, and predicts for it a great future. The prospects for selling pumping machinery, motors and other power generators—as, for instance, windmills and steam, oil and hot-air pumping machinery—are very good.



60-inch Pond Planer.

Pond Planers are built in twenty-one sizes, taking from 26 to 170 inches square between housings; for planing any length.

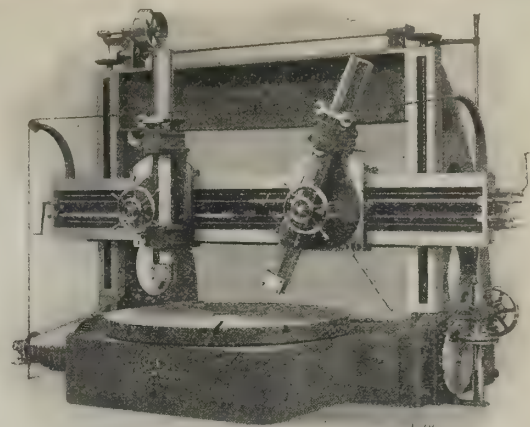
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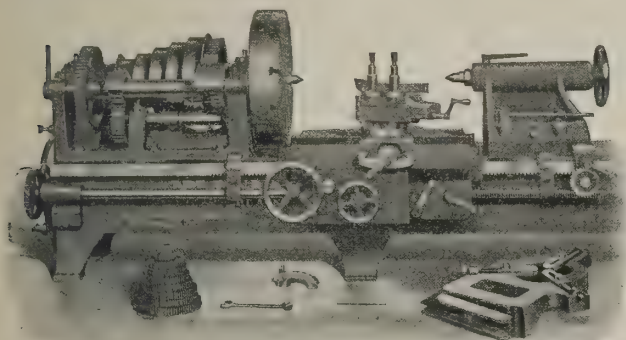
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Mill.**

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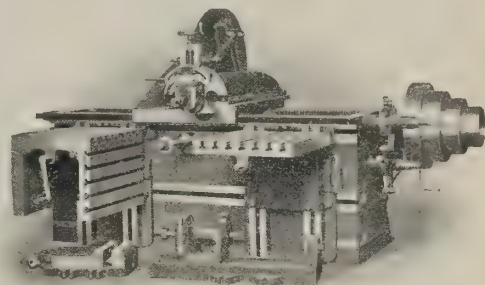
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Bement Traveling Head Shaping Machines are built with one or two heads, in four sizes, from 12 to 26 inch stroke.

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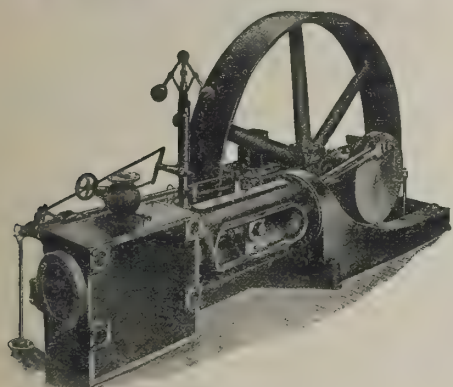
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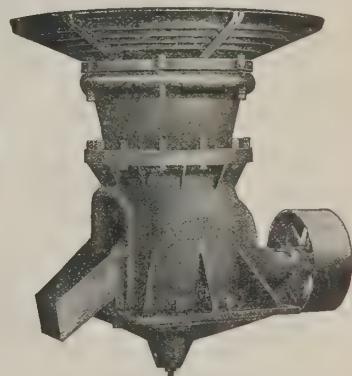
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PELTON WATER WHEELS

PIKES PEAK POWER CO.

The illustration herein shown is that of Pikes Peak Power Co.'s Hydro-Electric Transmission Plant, located near Victor, Colorado. It consists of three 1,000-horsepower Pelton Wheels, operating under 1,180-foot head and direct-connected to electric generator.

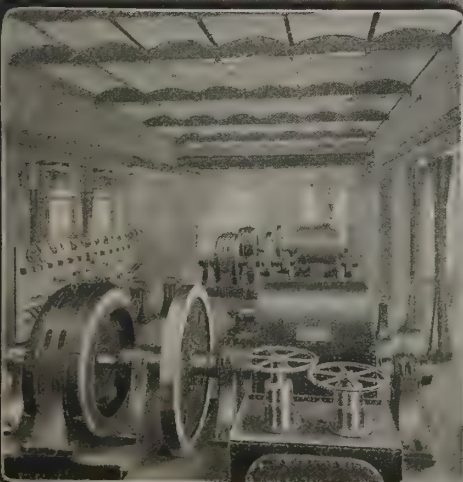
This electric power is supplied to the many mines, mills and other industries in that vicinity! This plant has been running day and night for four years at practically no expense for repairs.

Send for catalog illustrating many other plants of similar character.

PELTON WATER WHEEL CO.

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OUR WRITING MACHINES.

America Now Produces an Endless Variety to Suit the Whims of Everybody.

BUSINESS men throughout the world are using typewriters more and more than ever before, and they have been liberal patrons of the machines advertised in our columns. The industry in America has been growing rapidly, new factories have been built recently and new ideas have been coming out in commercial form. The New York Times has made a study of the situation and its deductions are of more than ordinary interest.

The report prepared under the direction of the United States Census Office in 1900 showed that the amount of capital then invested in the manufacture of typewriters and supplies throughout this country was, approximately, \$8,500,000, which represented the value of land, buildings, machinery, implements and live capital utilized, but did not include the capital stock of any of the concerns engaged in the industry. The value of the products turned out was about \$7,000,000.

There are indications that since the issuance of this report the total amount of capital employed in the typewriter industry has increased in the United States to about \$12,000,000, and that the value of the product increased correspondingly. Although, naturally, some of the concerns which have sprung up of late years have failed, there is abundant proof that many of them have succeeded, and that their machines are installed in offices and elsewhere. Among these machines there are some whose mechanism is very simple and others whose mechanism is extremely complex, at least to a layman. Ten minutes' examination of some of them is sufficient for any one to obtain a fair knowledge of their construction, while to understand the why and wherefore of others would require weeks of study.

It is doubtful if the development of any other modern device has been so rapid during the last twenty-five years, and few persons are to be found who claim to be familiar with the construction and operation of one-half the typewriters now in use. In attempting to explain why it is that under the present conditions there is a good demand for a score or more of these machines, a New Yorker of experience said:

"In the first place, no two operators write alike, because no two are of precisely the same temperament. One may depress the keys with a slow and even touch, another's touch may be quick and jerky, that of a third exceedingly irregular and clumsy and awkward in style. The would-be expert strives to cultivate a quick and methodical style of fingering the keyboard, and naturally chooses a machine capable of fine adjustment. A salesman will invariably tell you that the make of machine he handles is susceptible to the most delicate touch, but his statement is not always true. A slow operator, or one who cares more for the appearance of his work than for the speed with which it is done, usually selects a typewriter that looks to be strong and durable, and unlikely to balk or get out of alignment. Others have queer notions about the cause of 'sticking'—that is, the refusal of the typebars to strike—and will not buy a machine which appears to be intricate in construction.

"There is another body of operators who invariably insist on having the very latest machines produced. They resemble the bicyclist who willingly exchanges a wheel that is in good working order and practically new for another of a later model and pay \$25 to boot. If they get the impression that their machines are out of date, that settles it; they must get rid of them. On the other hand, there are old, pioneer operators who claim that the machines made five or ten years ago are superior to those of the present, and they practice what they preach by using what are commonly called antiquated models.

"There are other operators to whom the sound of a typewriter is exceedingly objectionable, and who make it a point to obtain the most silent machines to be had. They are not particular about the size of a machine or its peculiarity of action, but it must be, as they say, noiseless. It often happens that an operator occupies the same office as his employer, and that the latter objects strenuously to a machine with a loud click.

In recent years the light-weight typewriter has won a host of friends. Hundreds of people, among them clergymen, authors and newspaper reporters, desire a machine which they can pick up and carry easily, and perhaps put in their traveling bag; they have no use for one of large frame which occupies almost as much space when encased, as a small trunk. They consider portability before all else.

"There are to-day as many sticklers for faultless alignment as ever, but the question of touch above referred to is one in which the largest number of persons seem to be interested. Beginners, as well as experienced operators, are fastidious about the amount of pressure necessary to depress the keys, and, moreover, about the distance the keys drop when they are struck. Attempts have been made to lessen this distance and to facilitate the action of the keys, but they have been successful only in a measure. It is true we now have so-called power or electrical typewriters, which have met with some favor. In using these machines it is only necessary to touch the keys with sufficient force to release the latch mechanism, and electricity does the rest. The mechanism is operated by magnets, the circuit being closed whenever the writer strikes a letter.

"Discussion over the advantages of single and double keyboards, which has engaged the attention of manufacturers and expert operators for many years and has resulted in decided prejudices on one side and the other, will probably continue, but it really amounts to very little, as observation shows

that machines of both styles have their adherents, whose views are not likely to be swayed by individual opinions.

"Unquestionably, the 'visible writing' machines have something of a call over the others, but people not familiar with the facts would be surprised to know that some operators care very little about seeing their work while they write. They say they prefer to have it hidden, as it is in most cases, because if it were constantly in view it would tend to sidetrack their train of thought, so to say, or perhaps disturb a burst of eloquence. As a matter of fact, a skilful operator rarely examines his work until it is finished, and wouldn't look at it if it were in sight.

"A machine's price also has much to do with its sale, especially with beginners, but the person who becomes thoroughly acquainted with one or more so-called high-grade machines isn't apt to be influenced by their price, for he knows he can rent or buy at reduced figures a second-hand machine of the style that suits him which will answer his purpose."

Using Exhaust Air for Sweeping.

THE process of cleaning and sweeping by the use of the old hand-broom, which has been ameliorated somewhat by the patented carpet-sweepers, will now be still further relieved by a new process which employs exhaust air. A small electric motor drives an air-pump which maintains an exhaust of several pounds per square inch. The whole apparatus can be made portable on wheels, and to it is attached a dust receptacle, which is of ample capacity and is tightly closed. From this receptacle extends a rubber hose connection of sufficient length to extend to any part of the house. At the end of the hose is a nozzle "cleaner" or "renovator." This nozzle is a tube flattened at the end into a long slit opening, and so made that when it is rubbed up and down over a carpet or surface of floor or cloth it sucks up the dust therefrom at once, not only from the surface, but also from the body of the carpet or cloth and from underneath it, thoroughly cleaning the whole material. A severe test of the apparatus to show its effectiveness has been made by sprinkling and rubbing flour into a carpet, the vacuum cleaner removing every particle of the flour without injury to the carpet.

This apparatus has a special merit, in that it raises no dust, but, on the contrary, quickly removes and disposes of it, without harm to health. Not only carpets, but walls and all surfaces can be cleaned. In large buildings, stores, theaters, etc., a permanent and stationary plant can be installed in the cellar with hose connections on every floor or room. To these connections flexible hose would be attached and cleaning readily accomplished by removing all dust to the basement. The apparatus requires no special skill and provides a ready and effective method of cleaning street cars, machinery and electrical apparatus.—*Farm Implement News*.

Lipton's Irish Bacon from American Hogs.

THAT Sir Thomas Lipton buys American horses in Chicago, sends them to Ireland, and trains them, subsequently selling them to Englishmen as Irish jumpers, was asserted recently by Secretary Wilson, of the United States Department of Agriculture. Mr. Wilson also said that the well-known yachtsman buys American pigs in Chicago, and, canning them, sells them in England as Irish bacon. The Lipton revelation came out while Mr. Wilson was talking to the House of Representatives Committee on Agriculture about the breeding of American domestic animals.

The Secretary said afterward that he did not mean to imply that Lipton stood alone in selling American meats as Irish. "Nearly everybody else does the same thing," said he. "All the meats that go from this country are sold as English meats and Irish meats and Scotch meats." All of which goes to show an appreciation of American products that is spreading all over the world.

Denmark One of Our Good Customers.

TRADER relations between Denmark and the United States remain most cordial. Denmark is one of our best customers. In proportion to her population, she is almost as good a customer as Great Britain. A glance at the value of our exports to the latter country will emphasize the significance of this statement. The value of our exports to Denmark in 1901 was greater than in any year before or since. In that year our direct exports to Denmark were in value \$23,292,000, and the value of indirect exports was sufficient to increase this amount by several millions and place us second only to Germany in the list of countries enjoying trade relations with Denmark.

The Danes are very prosperous people. Denmark is essentially an agricultural country. However, one-fifth of the entire population is centered in the city of Copenhagen, and Copenhagen is essentially a commercial center. Opportunities for increasing our trade with Denmark are good.

Big Exportations of Steel.—The most important feature in the steel situation in America in the month just closed was the sale of a very large tonnage of ingots and billets by the United States Steel Corporation for export. It is stated that the corporation has sold all the crude steel that it can take care of during the first quarter of the new year. The full tonnage disposed of is not made public, but it is rumored that the orders realized will net the corporation about \$13 per ton.

"Standard" Porcelain Enameled Lavatories



THE "COPLY," PLATE 1035 G

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are made in many beautiful and artistic patterns, in one piece, free from cracks or plaster paris joints, and are therefore absolutely sanitary.

"MODERN BATHROOMS"

Our beautiful book shows the "Copley" and other "Standard" fixtures, with approximate costs, and will be sent free on request. Every piece of "Standard" Ware bears our "Green and Gold" guarantee label, and has our name "Standard" or initials "S. S. M. Co." cast in relief on the exterior. No others are genuine.

F. R. PATCH MFG. CO., Stone-Working Machinery.

SPECIALISTS
IN
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MACHINERY.

RUTLAND, VT., U. S. A.

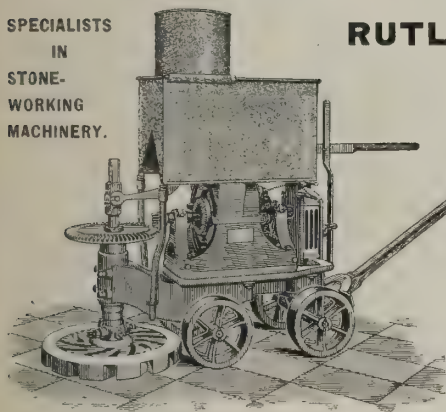
MANUFACTURERS OF

DRILLS,

Planers, Circular and
Straight;

Polishing Machines,
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Gang Saws, Derricks,
Traveling Cranes.



Patch Electric Floor Surfer and Polisher.

The Patch Electric Floor Surfer and Polisher is a device to dispense with the labor usually employed in dragging heavy weights over tile and mosaic floors to produce an even surface. It is also serviceable for polishing large granite and marble surfaces, and sanding wooden floors. The motor is 2-horsepower, and will be furnished any voltage required. The voltage required should be particularly mentioned when ordering. The surface wheel is 20 inches in diameter. The sand box and water tank are conveniently located, supplying either sand or water as desired. The truck wheels have a heavy rubber tire, thus preventing marring the surface. The machine is shipped ready for immediate use. Gross weight, crated, 900 pounds. Net weight, 800 pounds.

At Home and Abroad.



"We have a number of your

Burt Exhaust Heads

in use in our plants both in this and in foreign countries and have always found they GIVE PERFECT SATISFACTION, and we cheerfully recommend them," says THE DIAMOND WATCH CO.

The BURT EXHAUST HEAD removes all moisture from steam that comes out of the exhaust pipe, carries the water back to the boiler, if desired, and stops the disagreeable noise.

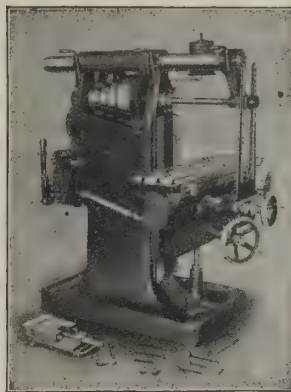
BURT MFG. CO.,

Largest Manufacturers of
Oil Filters in the World.

AKRON, OHIO,
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BECKER-BRAINARD Plain Milling Machine,

No. 3, New Model,



embodies a number of new and important improvements.

Special attention is called to the positive gear feed drive and change feed mechanism by which twenty changes of feed can be made without stopping the machine; the new clutch mechanism in connection with the hand wheels; also the box type of knee and telescopic elevating screw.

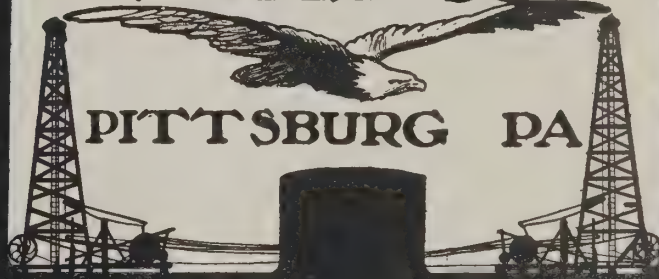
We also manufacture Vertical Milling Machines, Automatic Gear Cutting Machines and Milling Cutters.

Send for Circular A 50-27 E.

**BECKER-BRAINARD MILLING
MACHINE CO., Hyde Park, Mass., E. U. A.**

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MANUFACTURERS OF

ALL KINDS OF SUPPLIES

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OIL AND GAS WELLS.

**Derricks and Rig Irons,
Boilers and Engines,
Drive Pipe Casing and Tubing,
Drilling and Fishing Tools,
Manila and Wire Rope,
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We furnish Complete Outfits ready for drilling.

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Codes : Western Union, Postal and A B C.

3,000 WORDS IN ONE MINUTE.

American Invention May Revolutionize Telegraphy, and Change Business Methods.

MANY devices have been put forward to accelerate the transmission of messages by telegraph. A recent innovation which has attracted attention in America is the "telepost," by which the inventor claims to be able to send fifty words in one second of time. In some directions electricity has its limitations, and the feat of sending and receiving 3,000 words a minute, as a commercial proposition, seems to be one of them. The inventor has been able to make some important newspapers believe that his system is practicable, although none of them has undertaken to use it. The invention, if it is all that is claimed for it, is marvelous. The *New York World* is responsible for the following account of the invention which will so cheapen and revolutionize the methods of correspondence that the postal services of all countries will make way for telegraphy. This is such a remarkable innovation that in reprinting the following account from the *World* we have not stricken out the technical sentences:

"The present rate of handling commercial business over telegraph wires is something like fifteen words a minute. 'Press,' or newspaper matter, usually sent by a cleverly devised code that condenses whole sentences into three or four letters cannot now be handled with greater rapidity than an average of 2,500 words an hour. The fastest operator in the country sent 3,000 words in a single hour in a trial for record, but even he does not claim it could be kept up beyond one hour.

"The sending apparatus of the new system is a box-like device, into which a tape of paper is reeled, and which cuts tiny round holes in the paper in response to pressure on keys arranged like those on a typewriter. The symbols thus made, by a plan of double dots and the spacing of the perforations, form a Morse alphabet in holes. As these holes pass under a delicate pair of electric 'brushes' they open and break the current, which causes the communication, just as the hand of an operator on a key opens and closes the circuit for short and long periods which make the dots and dashes forming the Morse code.

"Receiving is accomplished in any one of three ways. The first is intended to be the most practicable for the rapid system. It is the recording of the message in written 'Morse,' the same as is used at present on the Wheatstone method. As the interruptions of the current occur, they affect two little steel fingers or prongs that rest upon a chemically prepared tape fed into the receiver. Between them is a needle or stylus, which discolours the chemical solution on the tape and marks it with the dots and dashes of 'Morse.'

"These dots and dashes, transcribed into letters and figures in the hands of experts, are delivered as the actual messages, or the strips of holes can be taken to another sender and forwarded to a branch office. If so desired, the same yards of holes can be placed on a sending apparatus and ticked off as slowly as required into the ear of a receiver who isn't bothered with a stress of business, in the same clicks that spell out words to an ordinary operator by the present method, only with perfect precision instead of the unsteadiness which is absolutely unavoidable by human agency."

According to the *World*, it is the ultimate design of the inventor to make of his system a "telepost," by which correspondence will be conducted with the swiftness of lightning, so that whole letters may be forwarded to distant points and answers received within a few minutes. That this can be accomplished he is entirely sanguine, and that the rate of such communication will be brought to a very low figure, he argues, from the tremendously increased capacity for handling business on the same equipment as now exists. If practical experiments substantiate the claims of the inventors we will inform our readers of the fact.

Better Demand for American Furniture.

AMERICAN furniture is becoming more popular abroad, judging by the increase in the exports, and firms engaged in it are confident that it is going to grow in proper ratio with other commodities. A man well posted in the trade said a few days ago: "We have been gaining rapidly. There are two concerns in New York which export quite heavily. One sends out nearly all classes of furniture, and the other confines its output to desks and chairs. Our greatest success has been in the cheaper and moderate-priced grades of furniture. Our manufacturers find markets abroad for practically all lines of furniture, such as chairs, tables, desks, beds and upholstered parlor sets. British Africa and the Spanish-American countries in my opinion, offer the best field for further expansion of the business."

An exporter said: "Americans have reached a stage in cabinet work where we can compete with the most artistic makers of Belgium and France. I have sent curio and music cabinets, desks, cellarettes and other furniture to Montreal and Quebec, for houses that previously would have no furniture except what was made in France. In designs, in decorations and in painting on wood we have artists who are as clever and as originaive as those abroad. There is no doubt at all that much of the furniture sold in this country as imported goods are made here in New York and in some of the American furniture centers. It is a deception for retailers to sell American furniture to customers who suppose that they are getting imported articles, but in actual work of the goods no injustice is done. A few years ago the finer grades of imported furniture could not be duplicated by any made in the

United States. Now no expert can tell the difference, because in material, in workmanship, in strength, durability and resistance to climatic influences, our cabinets and desks and other articles are fully equal to any foreign products. Some of our fine grades of goods have been sold in Paris. Most of the export business at present, however, is in the common furniture, such as chairs and beds, and in getting this class of business the main factor is in offering the lowest price."

Growth of Our Exports of Boots and Shoes.

EXPORTS of boots and shoes from the United States show a steady growth, and for the calendar year 1903 aggregate more than \$7,000,000 in value in 1893 they were less than three-quarters of a million dollars in value. Few of the important articles entering into our export trade show a more rapid growth in exports or a wider distribution than boots and shoes. More than sixty countries and colonies are named by the Department of Commerce and Labor through its Bureau of Statistics as the destination of the boots and shoes exported from the United States in the year about to end. England, Germany, France, Belgium, Denmark and the Netherlands, in the order named, are the chief European customers, and to Europe is sent more than one-third of our total exports of boots and shoes. England takes more than all the rest of Europe, much more than any other country, the amount being nearly one-third of our total shipments abroad.

In North America, Canada, Mexico, Cuba and the British West Indies are the largest consumers of our boots and shoes, while the South and Central American countries also take greater or less quantities, though not in proportion to the amounts taken by the West Indian islands, Mexico and Canada. Australia is a large importer of boots and shoes from the United States, nearly one-sixth of our exports in that line being to British Australia. Africa is also a considerable importer of boots and shoes from the United States, especially British Africa.

The United States now stands easily second in the list of the world's exporters of boots and shoes, while an examination of the relative growth of exports of this class of merchandise from the United Kingdom and the United States, respectively, justifies the conclusion that we shall soon overtake that friendly rival in the race for this contribution to the world's wants and consumption. Another interesting fact developed in a comparison of the figures of exports of boots and shoes from the United Kingdom and the United States is that the value per pair of the boots and shoes from the United States is apparently about 60 per cent. greater than that of those exported from the United Kingdom.

Better Transportation to East India.

THE growth of American trade with East India has led to new competition in transportation in that direction which will add to the facilities which our exporters are requiring through increasing orders. The *Brooklyn Eagle* reports that the shipping firm of Barber & Co, New York, appears to be engaged in a struggle with Norton & Son for the Bombay, Calcutta and Rangoon trade. The *Eagle* says under date of January 24th: "The steamship Anglo-Canadian is loading at the Commercial wharf, Atlantic dock, for the ports named. The Norton people advertise the sailing of a Bucknall line steamship, name not given, for Bombay, Colombo, Madras and Calcutta. The Anglo-Canadian will carry about 8,500 tons, and 1,000 more tons of freight are reported to have offered than the Anglo-Canadian can carry. She will take out an extremely large shipment of lubricating oils, aggregating 17,000 barrels, for Bombay and Calcutta and 2,500 drums of naphtha for the same ports. The United States Steel Company sends out over 1,400 tons of structural and bridge material; the balance of the cargo consists of domestics, sewing-machines and general merchandise.

"Barber & Co. and Norton & Son have long been associated in the South African shipping combination, but until this move Norton & Son had control of the Bombay and Calcutta trade. This departure of Barber & Co. looks like the commencement of a freight rate war to the East Indian and Singalese ports."

Such a war, if it materializes, will be welcomed by American exporters and their customers at the points affected.

Railroad's Farming Innovation.—An American railway company in the State of Illinois has planned an innovation for the farmers along its line. It has rigged up a portable motor, and whenever any of the farmers want power to run a thrashing-machine, shredder, wood-cutter or other machinery the motor will be set up in the farmyard or barn and connected up with a portable wire connection to the lines of the railway. It is claimed that this will afford the farmers a cheap power for grinding and other uses. The railway people will also undertake to permanently afford a lighting plant for farmhouses and barns.

Electric Cranes for South Africa.—General Manager Hammersley Heenan, of the Cape Town Docks, has recommended to the authorities of that South African port that the docks be installed with electric cranes and travelers. It is expected that American equipment will be selected, as the suggestion came from observation of the good work done by American electric products.

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

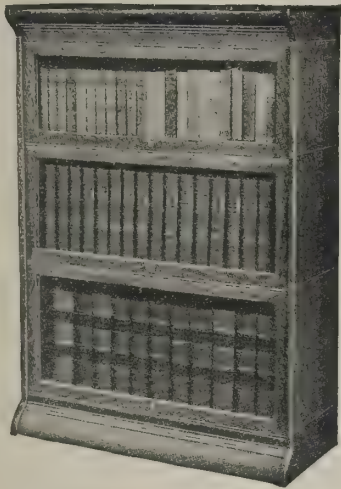
Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 3/4 cubic feet. This cut represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/2 inches deep and 32 1/2 inches long. Made of selected quarter-sawn oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warerooms, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



Top Section

List, \$3.00

9 1/4" Section

List, \$4.15

9 1/4" Section

List, \$4.15

11 1/4" Section

List, \$4.50

11 1/4" Section

List, \$4.50

11 1/4" Section

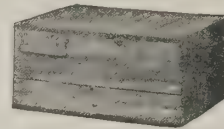
List, \$4.50

13 1/4" Section

List, \$5.25

Base Section

List, \$2.65



SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warerooms and on shipboard.

THOMAS K. OBER & CO. (INC.)

632 DREXEL
BUILDING,

Sole Export Agents of the Kitson Hydro-Carbon Heating and Incandescent Lighting Co.

PHILADELPHIA,
PA., U.S.A.

Keros Incandescent Oil Lamps.

Lamps of 600 Candlepower, 1,000 Candlepower and 2,000 Candlepower, for lighting Dwellings, Stores, Factories, Wharves, Streets, Warehouses, Parks, Private Grounds, Plantations, Mines, Railway Stations and Yards, Railway Excavations and Construction Work.

One Gallon of Kerosene Oil Gives a 1,000-Candlepower Light for Twenty-five Hours. Perfectly Safe. Does Not Increase the Insurance.

Send for Illustrated Catalogue and Price-List, giving full information.



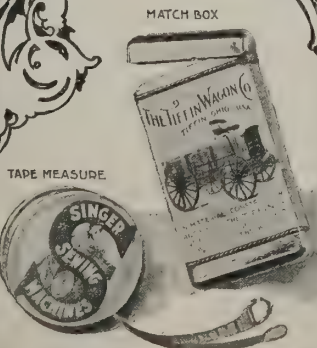
No. 505.
Outside Arc
Lamp.
Outfit, with
Tank.
1,000 Candle-
power.



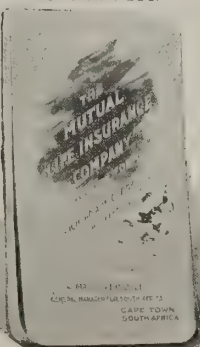
No. 116.
Portable
Lamp for
Household
use.
1,000 Candle-
power.



CELLULOID
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MEMORANDUM BOOK



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**BALTIMORE
BADGE & NOVELTY
COMPANY.**

BALTIMORE, MD., U.S.A.



CATALOGUE, ESTIMATES AND SPECIAL DESIGNS ON APPLICATION.

MACHINE TO PICK COTTON.

Will Cheapen the Marketing of a Commodity That Is in General Demand.

COTTON is one of the most interesting commodities at the present time. Manipulation of it has closed mills throughout the world and has caused inquiry and investigation to be set afoot to enlarge the world's cotton-producing acreage. We have given more attention to this subject than would interest most of our readers, but the cotton question affects millions of people, and in view of the spread of the cultivation of the article, it will be interesting to many of them to learn the particulars of a unique American invention. It is vouched for by the New York *Herald*, and the *Herald's* story of it follows: "A Memphis man, who has for some years been at work on a pneumatic cotton-picker, has been granted patents on several improvements on his machine. The invention of a machine that will pick cotton, one that can do the work that the negroes are called upon to do, has been the goal of many an inventor for a half century. Many thousands of dollars have been spent in trying to give to the cotton States a picker that would pick. This machine was tried last season, minus several of the improvements, for which the inventor has just been granted a patent, and did good work. The picker tried during the present season had most of these improvements and did the work highly satisfactory to the inventor and the capitalists who are backing him.

"The machine is called a pneumatic cotton-picker. It is mounted on a high-arched frame, something like a wagon. This wagon covers one row. Hose attached to different part of the machine allow the men operating it to pick two rows on each side of the machine, which, with the row under the picker machinery, give a total of five rows that can be picked at one trip. The speed with which the cotton can be gathered depends on the skill of the men who have the handling of the hose. There are four lines of this hose, directly connected with a 26-inch blower, which pulls the cotton from the bolls, through the blower, and dumps it in a large bag attached to the bed of the machine. Power to run the blower is obtained from a six horse-power gasoline engine at the front of the picker frame. When the end of a set of rows is reached all that is necessary is for the driver of the two mules to turn around and go back over another set of rows.

"One of the operators, or the man who drives the team, is supposed to watch the bag, and when it is full unhook it and attach another, which takes but a few minutes. These bags, owing to the force with which the cotton is sent into them by the powerful blower, are packed tighter than they can be 'tramped' by the old-time method. Five men are required to operate the picker. It has a capacity of 4,000 to 5,000 pounds of cotton a day of ten hours, or about 1,000 pounds a man per day—more than four times the amount that can be picked by hand. The expense of operating is small, and thus it will be much cheaper in the long run to pick cotton by machinery. All of the cotton handled is much cleaner than the product picked by hand. The ends of the hose are so constructed as to catch nearly all of the leaves attached to the open bolls, but will not pull the bolls to pieces."

Refuse Rubber Is Now Made Valuable.

AMERICAN inventive genius has again solved the problem of creating something out of nothing, or, rather, making money out of refuse.

Worn-out rubber, like worn-out silver, is something that does not exist in these days. Ever since the advent of bicycles and motor cars, both of which drew heavily on the world's rubber supply, and ever since the hundred and one uses to which rubber is put in connection with electricity, the material has become more and more scarce and valuable, so that even the old rubber shoe and the worn-out rubber boot may throw out their chests in pride at being worth really something. Nothing containing rubber is discarded nowadays. The old rubber coat over which the spring tires of a motor car may run on a country road to-day may some day find a nesting place in the soft tresses of a woman's hair, after having been transformed into a handsome comb.

Even vulcanized rubber, which, owing to the sulphuric process to which it was subjected, was formerly valueless, is now subjected to a process which rejuvenates it and makes it fit to be worked up again for the purposes of the manufacturer. Immense quantities of this product, which formerly was assigned to the rubbish heap, are now treated and admixed with a certain percentage of new gum, enough to cheapen the price of most rubber goods turned out by the manufacturers to-day. Old rubber, however, can be used by itself without any addition of fresh gum, the process of treatment being a simple one.

Panama Canal Inspires American Business Men.

COMING events connected with the Panama Canal are casting their shadows before. The New Orleans Board of Trade, the chief business body of the Southern metropolis of the United States, has given its indorsement to a project to build a line of steamships to pass through the canal and trade with the Western countries of South America and with Asia. The plan is to build a fleet of large, swift, modern vessels, to interest the entire Mississippi Valley in the project, to raise \$5,000,000 for the work and to get the Governors of the States in the valley, the mayors of the cities and

all its commercial bodies to take a hand in the scheme by way of subscribing for the stock or receiving subscriptions.

This is a move in the right direction. A committee of the New Orleans Board of Trade has been appointed to get the project into practical shape. It is proper that New Orleans should take the lead in this scheme. That town is the principal seaport in the valley and the valley will be the chief beneficiary of the canal. A large part of the ocean trade of the Mississippi watershed will pass through that port. The Mississippi watershed runs north and south through the center of the middle western section of the United States.

When the canal is opened New Orleans and all other points in the Mississippi Valley will be brought several thousands of miles nearer by water to the west coast of South America and to Asia than they are now. This will be an item of incalculable importance in the extension of the trade of that section with those regions. The project for the building of a line of steamers to South America and Asia will have great interest for all the valley.

Success of American Glass-making Machines.

IN our issue of last April we printed an account of the new machines to make glass. They are now in practical operation and this letter from a correspondent at Hartford City, Ind., will prove interesting to those of our readers who are concerned: "There is no longer any doubt that the window-glass blowing machines have superseded the human blowers in all the plants of the American Window Glass Company, and that they are a great success. The company has just started ten more mechanical blowers in addition to six in the No. 3 plant here, which have been in operation since September. This will give the Hartford City plant of the trust the largest number of mechanical blowers of any factory west of Pennsylvania. Each machine has an output equal to that of eight blowers, eight gatherers and eight snappers. The sixteen machines have 108 pots capacity, and the displacement of 324 skilled workers and almost an equal number of common laborers will follow.

"Few persons have any conception of the vast saving these machines have over the human blowers, the highest-priced skilled workmen in the world. At a labor cost of not to exceed \$20 in the blowing-room the six machines at factory No. 3 made 1,444 twenty-foot rollers and more than 100 pieces in two shifts of seven hours each the other night. When cut this made more than 200 boxes and represents more than the work of three skilled workmen for a full month, the limit fixed by the union being 192 boxes. Six machine tenders and six snappers, three of each for each shift, with wages of \$1.50 a day, or \$18 for all, made this amount of glass. The wages of a blower would have been, with his gatherer and snapper, at least \$350.

"The difference in wages of more than \$300 on 200 boxes of glass shows how even with its large investment in machines, the American can turn out glass by machines cheaper than can be done by human blowers at anything like present wages, even after allowing 8 per cent. on the investment for the machines. The American operated 118 pots capacity here last year with human blowers. This year it employs none."

China at the American Exposition.

CHINA'S exhibit at the American World's Fair this year will be a display of Oriental splendor and will be made by the Chinese Government proper, which is the first time in the history of the celestial empire that such a thing has been done. Funds for the exhibit will be appropriated from the Imperial coffers at Peking, being secured largely through the influence of the Dowager Empress Ann, who is greatly interested in the Exposition.

The little force of Chinese workmen now in St. Louis, U. S. A., has begun the installation of the intricate hand-carved interior woodwork of the Chinese national pavilion. The woodwork was recently received from Shanghai and consists of about 6,000 pieces.

A shipment of building material and totem poles arrived from Alaska, and six native workmen are expected to arrive early this month to begin the erection of the two native structures surrounded by totem poles, which will flank the main Alaska building.

1903 a Record Breaker for Foreign Trade.

THE preliminary figures of the Bureau of Statistics of our total imports and exports for the calendar year 1903 show that the foreign trade of the United States was for that twelvemonth the largest in the history of the country, not only the largest in the aggregate, but in both imports and exports, reckoned separately. The total for imports and exports together was \$2,480,141,228, against \$2,330,002,803 for the previous year and \$2,345,795,770 for 1901, when the highest previous record was reached.

Of exports the total value for 1903 is put at \$1,484,668,127, which is an increase of \$123,982,194 over the previous year. Another high-water mark was recorded in the exports for December, which footed up a total of \$174,734,368.

Electric Motors for South Africa.—The Westinghouse interests are manufacturing large lots of electric motors at their plant in Newark, U. S. A., for shipment to South Africa.

BALKE MANUFACTURING CO.,

Patentees and Manufacturers of
Balke Combination Davenport, Billiard and Pool Tables,
and Standard Tables.

INCORPORATED \$100,000.



Style "A," as a Davenport.



Benedict Special Billiard Table.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note—The prices here quoted, U. S. Gold or its equivalent, are for **Foreign Markets Only**, and include boxing ready for steamer, delivered f.o.b. cars at New York City.

Style "A," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

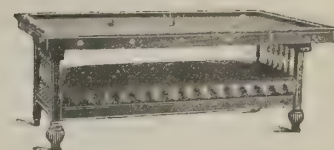
Style "A," converted into a Billiard or Pool Table, has a playing surface of $3\frac{1}{2} \times 7$ feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, \$95.00. Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: $4' \times 8' \times 6'$; $32'' \times 36'' \times 6'$.

Standard Billiard Tables.

"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate; imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4×8 feet. Price complete, \$100.00. Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: $4' \times 8' \times 3\frac{1}{2}' \times 8'$; $4' \times 8' \times 2' \times 2'$.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, $3\frac{1}{2} \times 7$ feet. Price complete, \$90.00. Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: $4' \times 8' \times 8'$; $3'6'' \times 6' \times 2'$.

Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order. Our catalogue, illustrating and describing the various styles of Billiard and Pool Tables manufactured by us, mailed postpaid.



Style "A," converted into a Billiard Table.



"Den" Special Billiard Table

BALKE MANUFACTURING CO., Grand Rapids, Mich., U. S. A.

CONTINENTAL CAR AND EQUIPMENT CO.

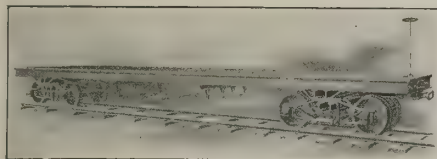
FOREIGN DEPARTMENT:

Whitehall Building, Battery Place, New York, U. S. A.

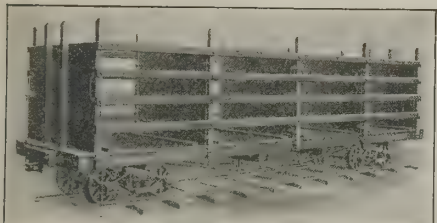
Cable Address: "CONEQUICO," New York.

MANUFACTURERS OF

Railway Freight, Plantation, Industrial and Mining Cars.



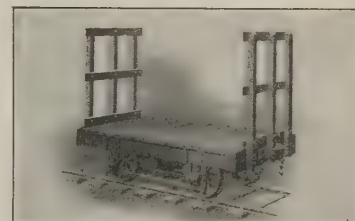
ALL-STEEL FLAT CAR.



CUBAN CANE CAR.



GONDOLA CAR.



PUERTO RICAN CANE CAR.

We also make Special Cars for all purposes, from designs furnished, or will furnish our own designs upon request.

FOR FOREIGN MARKETS.—Our Cars are taken apart and packed for shipment according to the best known methods.

Our Catalogue (English and Spanish), illustrating and describing the various styles of STANDARD CARS made by us, mailed postpaid.

Please mention THE AMERICAN EXPORTER.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."

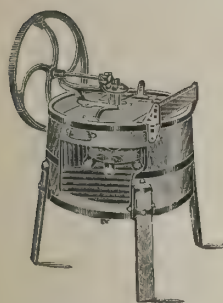
THE Guarantee

FOUR-STROKE ROTARY

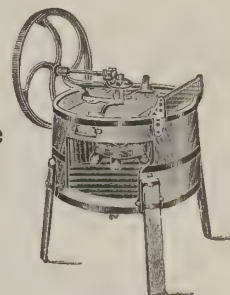
Washing Machine

Just placed upon the foreign and home markets, combines the Latest Improvements in High-Speed, Ball-Bearing Washing Machines and will accomplish all that is claimed for or required of any washing machine, and more.

NOT A SPECULATION BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.



GUARANTEE WASHER.



GUARANTEE WASHER.

FOR TWENTY DOLLARS

in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines.** (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds. Order **FOUR NOW.** Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States.

NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.

The WATROUS SANITARY SPECIALTIES

The Watrous Combination Bath Fixture.

This fixture supplies hot or cold water or any desired mixture, by simply turning the handle to the right or left. To empty bathtub, simply lift the handle.

It is the only perfectly sanitary bath fixture made, as the tube is always filled with clean water direct from the supply instead of from the tub, and therefore impossible to become foul.

Has an independent supply passage direct to tub. **Can be attached to any bathtub.** Is constructed with ordinary Fuller balls. Is simple, cheap, durable and heavily nickel plated.

Upon receipt of price we will box, ready for steamer, and deliver F. O. B. cars New York, as follows:
One (1) Watrous Aquameter Water Closet, complete (Fig. "A 4.") as shown. Six (6) cubic feet. Weight, 100 pounds.....\$30.00
One (1) Combination Hot and Cold Water Bath Fixture, as shown. $\frac{1}{2}$ cubic feet. Weight, 17 pounds.....\$15.00

Our sanitary specialties are protected by U. S. and foreign patents. Our illustrated booklet mailed, postpaid, to any part of the world. Please mail us duplicate order when ordering through commission houses.

The Watrous Aquameter Water Closets.

Adopted by **The Pullman Company** and **all important Railway and Steamship Companies** in the United States.

These closets have no equal for **Public Buildings, Residences, Steamships, Private and Parlor Cars.**

The closet shown operates perfectly with $\frac{1}{4}$ -inch or $\frac{3}{4}$ -inch pipe, according to pressure.

Connected direct to service pipe, without any tank. Uses from one to three gallons of water to each flush. Saves 50 per cent. in water bills. Noiseless and positive in action. Neat and durable. Successful everywhere. Fully guaranteed. Thousands in use everywhere.



Figure "A 4." Watrous Aquameter Water Closet.



Watrous Combination Hot and Cold Water Fixture.

THE WATROUS COMPANY, Manufacturers, CHICAGO, U. S. A.

American Automobiles for 1904.

THE January automobile show in New York City this year was a decided success. The American exhibits far outnumbered the foreign ones, although the latter made an extremely good showing. The exhibition developed that American manufacturers had made great advances. Foremost among the noticeable features of the great show was the exhibition of automobiles that were built for practical and commercial use. Instead of cars built only for fair weather and good roads the visitor found enclosed and semi-enclosed bodies, ranging from the luxurious cab and brougham forms, and the canopy top with closed front, side curtains and perhaps glass-enclosed rear, to the light, folding buggy tops, both with and without storm aprons.

Instead of the inconveniently placed rear door that has so far been the thing for tonneau bodies, he found that a marked tendency exists toward the lengthening of wheel bases and the adoption of side entrances between the front and rear seats, and occasionally of front seats that can be tilted to allow egress and ingress for the passengers in the rear. The divided front seat still rules in the heavier cars, but it is more apparent that its purpose is simply that of securely fixing the driver in his place at the wheel, for which reason there is something of a disposition shown by manufacturers to make the other front seat of less permanent form.

In one large and handsomely finished car, the property of a well-known American millionaire, one of the front seats is done away with altogether, only that for the chauffeur being retained. The space thus cleared is utilized simply as a broad platform leading from the front of the car to the enclosed rear. A small folding seat is provided to be quickly set up in this space if desired.

Aluminum has practically superseded bent wood in body construction, and although wood is still retained for framework the most enterprising builders—those least trammelled by horse vehicle traditions—seem disposed to eliminate it for every purpose except that of serving as an edge to which to tack upholstery. Upholstery is in the main of the established sort. A few pneumatic cushions were seen, especially as auxiliary cushions—for seats, foot-rests and the like—and their merit is such as to suggest that a time must come when this light and durable form of upholstering will prevail for motor vehicles to the exclusion of all else.

One manufacturer offered something of a surprise for those who prefer cars with glass fronts and enclosed sides. The innovation consisted of transparent celluloid sheets to be used in place of glass, their lightness and freedom from breakage being very advantageous. Whether the danger of broken glass is offset by the objection that the celluloid might catch fire too readily is for the purchaser to decide.

From the mechanical standpoint, a few revolutionary changes were seen, but tremendous improvement in the way of refinement of detail was observed. The pressed-steel frame has progressed considerably in popular favor, and many of the new cars make use of it. Several large ironworkers have regularly engaged in supplying automobile manufacturers with these frames, and their product will be exhibited at several stands in the hall.

Most makers adhere to springs of the established half-elliptic type, but these are becoming longer and longer, and the plates have been increased in number and made thinner. The running of the 1904 cars is made considerably smoother by these refinements in spring design.

The artillery wood wheel is now used generally, with the exception of a few very light cars with wire wheels, and some that are equipped with tubular steel wheels.

In engine design a marked tendency was found toward air cooling for gasoline engines, although the believers in water cooling have evolved systems that are considered highly reliable, simple and efficient. A great many use the honeycomb radiator, several American forms of which are built of wavy vertical tubes so nested together as to leave a multitude of air spaces.

The vertical motor in front was widely in evidence, although a few of the largest concerns still adhere to single and double cylinder horizontal types placed amidships in the body, or, in a few cases, across the front of the car. Of vertical motors those with four cylinders are more numerous than those with three, but there seems to be a strong undercurrent of opinion in favor of the latter type. Cylinder heads are almost without exception cast integral with the cylinder. The same holds true with most water-jackets, but a few are of aluminum or copper, ingeniously and firmly built on.

Jump-spark ignition is practically universal. Only one or two examples of "make-and-break" will be on view. Storage batteries and magnets or dynamos supply current for ignition in most of the larger machines, while the smaller very commonly use dry cells. Some of the ignition dynamos are so arranged as to make the use of any unnecessary; others work in connection with a battery, which is normally charged by the dynamo, but will continue to give current for some time should the dynamo give out.

The bevel-gear, or propeller-shaft drive, with all mechanism completely protected from dust and mud, is evidently preferred by a majority of American manufacturers and buyers. A separate differential shaft, with individual chain drive, is used to some extent. Many prominent makers use a single chain drive to the differential on a live rear axle.

Speed changing on the large cars is generally effected by the European type of sliding gear, but planetary and individual clutch systems are more used for the smaller vehicles. Ball bearings are used in a few of the sliding-gear transmissions.

Systems of control vary widely. Wheel steering has practically super-

seded the lever on everything except a few light runabouts, but all the way from one to three levers are used to control speed, and there are brake, accelerator, throttle and clutch pedals of all forms and arrangement. Hand levers on emergency brakes are common.

Lubrication systems seem for the most part designed with a view to requiring a minimum of attention and the assertion that one oiling will serve for a run of 100, 200 and even 1,000 miles, may be expected. Fuel and water supplies are likewise provided for on the basis of 100 and 200 mile runs.

The double-tube clincher tire has about relegated the single tube to the junk shop. The most marked advances in tire construction were noted as consisting of various provisions that are made to facilitate the ready removal of the outer casing. This is ingeniously accomplished in a number of instances, and the day of struggling for an hour or an hour and a half over the repair of a slight puncture is evidently passed.

Gasoline cars, of course, hold the center of the stage, but the types of steam machines that still survive are excellently qualified to hold their own with their more numerous competitors. Of the steam type of construction the flash system of steam generation seems generally preferred to the boiler, although one runabout with an ordinary flue boiler, carrying a normal pressure of 400 pounds to the square inch, was on view at the exhibition. The electric cars were much in evidence, and those equipped with Edison's new storage battery were centers of attraction.

During the week 70,000 persons attended the exhibition. The actual value of the autos exhibited was \$14,400,000. The vehicles exhibited were classified as follows: Gasoline cars, 185; chassis, 33; water-cooled motors, 156; air-cooled motors, 29; four-cylinder vertical engines, 28; double-opposed cylinder, 42; jump-spark ignition, 158.

Will Be Automobiles on Water.

THE development of the motor boat or watermobile has taken a fresh impetus in America, and plans have been made on a large scale. Contracts have been made for two vessels that will probably be among the most interesting boats of the coming season. One is sixty feet long and will be propelled by a single screw driven by a six-cylinder, reversible marine motor, similar to the engine used in the yacht which beat a swift shore steamship last summer. The sixty-foot boat will have 110 horse-power and a second boat will be built, ninety feet long, and of about five times the power of the other—500 indicated horse-power, using twin screws and the same type of gasoline motor.

Other contracts of lesser importance are reported, but they all tend toward higher speed and the adoption of automobile ideas in small boats.

Lewis Nixon, who is an authority on the subject, when asked as to the trend of development in auto boats, said:

"At present with many builders the tendency is to use the engine of an automobile in a boat. The danger in this is that automobile engines do not exert their full power except occasionally when on an incline, while in a boat full and continued demands are made upon the machinery. For this reason the design should be upon radically different lines, in order that the boat may give satisfaction."

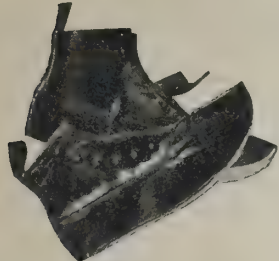
Irrigating Machinery for Australia.—We have heretofore noted the great demand in Australia for our irrigating machinery, and our exporters will be interested in the following from *Modern Machinery* on the subject: "The Canadian commercial agent at Sydney, New South Wales, reports the extraordinary success of artificial irrigation on comparatively small areas of land, and predicts for it a great future. The prospects for selling pumping machinery, motors and other power generators—as, for instance, windmills and steam, oil and hot-air engines—are very good. It would be advisable to sell such machinery through agents who understand how to put it up. Some firms that sell that class of machinery for certain manufacturers could be induced to take hold of new ones, if good and cheap."

Electric Water Heater.—A Massachusetts, U. S. A., inventor has contrived a handy electric water heater, which consists of a porcelain tube, having a spiral groove on its surface, in which a platinum wire is wound, the whole being covered by a metallic tube insulated from the wire and finished with a woolen handle and a wire leading to a plug, to be inserted in an incandescent electric lamp socket. When the current is switched into the wire, it passes over the spiral platinum wire and heats it almost to redness through the resistance it offers, thus warming a pitcher of water in a few minutes by simply inserting the heater in the pitcher. This device can be carried in a small satchel and is always ready for use wherever an incandescent electric lamp can be found.

Two Metal Ceiling and Wall Exporters Consolidate.—Henry S. Northrup and Coburn & Dodge, two of the pioneer New York manufacturers of metal ceilings and walls, have consolidated their business interests under the corporate name of Northrup, Coburn & Dodge Company. The export business of the two firms, now associated, will be conducted on the same lines as heretofore.

American Conduits for Russia.—James F. Cummings, who has a \$1,500,000 contract for supplying and laying conduits for the municipal telegraph and telephone system in St. Petersburg, was in New York last month. The material for the conduits is being manufactured in the United States.

UPPER LEATHERS



SHOE UPPERS.

The American Shoe Manufacturers' Export Company begs to announce that its **LEATHER DEPARTMENT**

is prepared to furnish all kinds of leather for the manufacture of shoes of every description, in large or small quantities. Careful selections; packing in any manner desired and prompt shipments guaranteed.

Send us samples of what you use and let us quote prices.

Our Shoes Are Famed All Over the World.

We make more than 500 different kinds for men, women and children—from the cheapest to the best. We also manufacture Shoe Uppers, that is the shoe complete without soles or heels. Send for samples. See above cut.

Our **DIAMOND BRAND SHOE DRESSINGS** are the best on the market, but priced lower than other makes.

BLANCOLA is a liquid dressing for white canvas shoes that wins favor on sight.

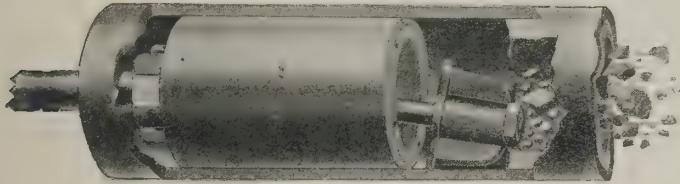
American Shoe Manufacturers' Export Co.,

28 SOUTH WILLIAM STREET, NEW YORK, U. S. A.

President: FRANK BORNN, of Bornn & Co., Exporters and Importers, New York, U. S. A.

You Take Absolutely No Chances

IN BUYING THE WONDERFUL



(For Water Tube Boilers)

The same machine can also be used for return tubular boilers, which is provided with a hammer instead of cutter as it appears on this cut.

DIAMOND BOILER TUBE CLEANER.

The only known and successful device for removing scale and soot from return tubular or water tube boilers. Same machine can be used for both styles of boilers by changing the hammer. From 20 to 60 per cent. in fuel saved; prolongs the life of boilers, and is the means of avoiding possible accidents. Our Diamond Cleaner is in use in every part of the world, to whom we can refer you. Every Diamond Machine bears this trademark and is also stamped with our name.



TRADE MARK.

FREE TRIAL.

POWER SPECIALTY COMPANY,

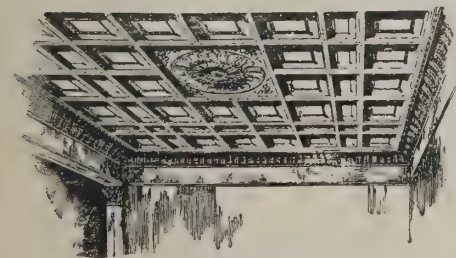
Sole and Exclusive Manufacturers,

Bridgeburg, Ont., Canada. Berlin, Germany.

Address for particulars **Buffalo, N. Y., U. S. A.,**
Department "A," 361 Washington Street.

NORTHROP'S

Stamped Metal Ceilings,



In Soft Sheet Steel,
For All Buildings.

Highest Prize Paris
Exposition, 1900.

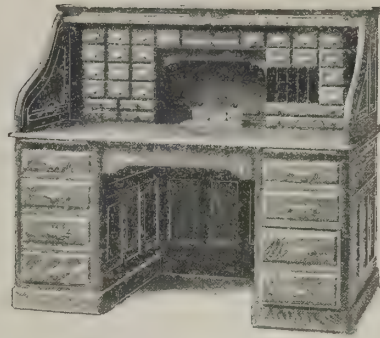
Send for Catalogue. Give diagram of the room for an estimate.

**Northrop, Coburn
and Dodge Co.,**

40 Cherry St., New York, U.S.A.

MOON DESK CO.

Muskegon, Mich., U. S. A.



Cable Address:
"MOON,"
Muskegon.

Manufacturers of

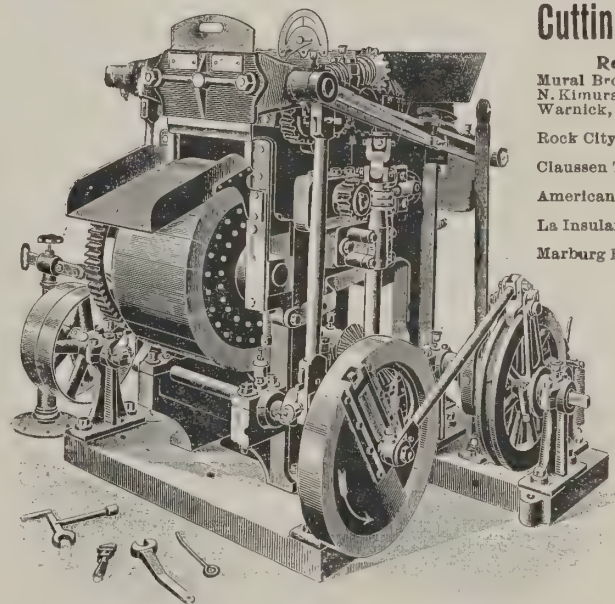
**Roll-Top Desks,
Flat-Top Desks,
Bookkeepers' Desks,
Typewriter Desks,
Filing Cabinets,
Typewriter Stands,
Directors' Tables.**

Special attention given to filling Export Orders.

Send for Illustrated Catalogue and Export Price List.

Order through buying and shipping agents, and send us duplicate of orders, so as to avoid mistakes.

"American" Gigarette, Long, Plug and Flake-Cut Tobacco Cutting Machine.



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Mural Bros., Kyoto, Japan.
N. Kimura & Co., Tokio, Jap.
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And others
where
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throughout
the world
by Export
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Houses.

For prices and full particulars write

JOHN B. ADT MACHINE WORKS, Baltimore, Md., U. S. A.

IRONING, DRYING AND FINISHING

BED and TABLE LINEN at a cost of from 10c. to 60c.
per 1000 pieces on this famous

Used by over 265 of the
Largest Laundries and Hotels
in the United States and Canada.

Annihilator Mangle.

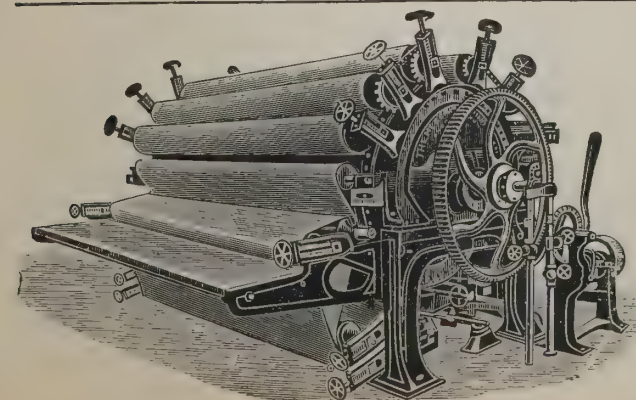
The Waldorf-Astoria Hotel, the largest in America, irons from 35,000 to 45,000 pieces daily on these machines without the use of a dryroom.

FOR STEAMSHIP, HOTEL AND RESTAURANT WORK THIS MACHINE HEADS THE LIST AS A MONEY-MAKER IN PUBLIC LAUNDRIES.

Made in seven sizes, with capacities from 5,000 to 35,000 pieces daily.
Importers should send for our catalogue and discount sheet. We handle a full line of modern Laundry Machinery.

EXPORT LAUNDRY MACHINERY CO., 74 West Houston St.,
NEW YORK, U.S.A.

Cable Address: "NIHILATOR."



American Manufactures Liked in Scotland.

RUFUS FLEMING, United States Consul at Edinburgh, Scotland, in a report just issued by Secretary Cortelyou, of the Department of Commerce and Labor, sends some information that ought to be appreciated by importers elsewhere in the world, for the Scotch are proverbially certain to get the best they can obtain for the lowest practicable price. In other words, they are shrewd enough to recognize a good article at its proper value and purchase it. Mr. Fleming says in part:

"American pumps have lost none of the favor in which they have long been held. The trade is well managed. Some makers of these and other American devices have shown good business tact by sending representatives to customers in this country, not to solicit orders, but simply to take suggestions as to any improvement or change which might better adapt them to the market. This enterprise of manufacturers is a novel thing to foreign dealers and is warmly commended here. In a few cases alterations have been made in pumps and other articles to meet local wants or fancies, with good results.

"Our machine tools and hand tools continue in strong demand. By sending over poor goods a few years ago German firms irreparably injured their tool trade in this market, and they are no longer serious competitors. In 1901 the Germans had practically all the trade in steel spoons, but this has now been taken by the Americans, who make a better article at as low a price. One Edinburgh wholesale house is doing a profitable business in these spoons, which are sold principally in the country districts.

"A Scottish wholesale firm has scored a decided commercial 'hit' with an American machine-made, single-barreled, breech-loading gun, which sells at a moderate price. Galvanized goods, such as oil cans, are selling freely; the Americans have a share of this trade, and, in the opinion of prominent dealers, will obtain more of it if they keep their wares up to the present standard.

"Our woodworking machinery—for planing, sawing, molding, sandpapering, etc.—has long been used in Scotland to a considerable extent. There is an increasing sale of American clocks and watches of standard quality and moderate prices. Ship chandlers are handling fair quantities of American valves, ironware and other supplies. This trade has been growing and promises to become important.

"In furniture, roll-top desks and bookcases are still the prominent items in the imports from the United States. The desks are sold largely, notwithstanding that the local office-furniture manufacturers have copied them closely and made special efforts to keep out the foreign article.

"Dealers in American shoes report an increasing trade. Our styles gain popularity and prices of the best grades are low, compared with the prices people heretofore paid for home-manufactured shoes. A notable effect of the American 'invasion' in this branch of trade is a general reduction of the extraordinary profits of retail dealers before the introduction of American stores. Grades of British-made shoes which sold for \$6 four years ago can now be bought for \$4.

"Our leather, both sole and upper, has been imported in somewhat larger quantities than last year by British shoe manufacturers, owing, it is said, to their increasing orders from the colonies. Not only is the British shoe made chiefly of American leather and by American machinery, but even the metal hooks and eyelets are practically all imported from the United States.

"Our axes, heavy and light, are still prime favorites; neither British nor continental makers can equal them in the combined merits of excellent quality and cheapness.

"Our soaps, toilet and common, are used more than ever. The enterprise of American manufacturers of the better grades is notable, both in the methods of placing their goods on the market and of advertising them, and it is thought that the business will develop greatly in the near future.

"American computing scales, cash registers and other specialties have been widely sold in Scotland this year, and the agents say that there is yet a very broad field before them."

American Products in Breslau.

UNITED STATES CONSUL ERNEST A. MAN, at Breslau, Germany, reports that American goods of various kinds seem to be slowly acquiring a market in that region, in spite of the fact that every possible obstacle continues to be placed in the way of their introduction and sale." He continues: "American shoes are beginning to be nearly as well known in Breslau as in Berlin, Dresden, Frankfurt, Munich and other important cities, where they are to be found in stores devoted exclusively to their sale, whereas in Breslau they are still only sold in shops handling other makes of shoes or in connection with men's furnishing goods. While most of the lines of American goods that have made their way into other parts of northern Europe are also to be found, with limitations, in Breslau stores, there is evidently a field for much larger sale of all these wares.

"Among the articles which might be sold in this district at the present time are American door locks intended for front or entrance doors, as, in addition to the old-fashioned locks with their large and cumbersome keys and lack of security withal, they are now introducing here an extra-security lock, said to be on the American system, with a small, flat key, which unites safety with convenience and which in make and finish seems greatly inferior to American locks of the same style. These locks should be mortise locks, as

rim locks are not in general use and should be of moderate price. American office furniture and rocking and easy chairs, many of the latter in the style of what is known as the Morris chair, are to be seen for sale here.

"The sale of American agricultural machinery and implements, while considerable, could undoubtedly be greatly increased in this large and important agricultural district, where so many manufactures of an inferior order finds an excellent market."

New Trade Treaty with France Expected.

THE officials of the United States Embassy at Paris and of the French Ministry of Commerce express satisfaction at the despatches from Washington indicating a disposition to make a new commercial agreement between France and the United States. Negotiations to that end have been in progress since last July, when the French Parliament, without warning, placed a practically prohibitive rate on American pork and salt meat.

During the negotiations an official intimation was given that if the prohibitive rates on American pork were continued President Roosevelt might find it necessary to exercise his authority under the reciprocity agreement of 1898 of suspending the reduced rates which the United States accord to French clarets and other still wines. Under the agreement of 1898 French still wines are admitted into the United States at 35 cents per gallon, which is considerably below the regular rate, but a clause in the agreement gives to the President the right to suspend the reduced rate if any action is taken prejudicial to American trade. It was therefore pointed out to the French Ministry of Commerce that the prohibitive rates on American pork were likely to be considered such a prejudice to American trade as to warrant the President in suspending the privileged tariff granted to French still wines.

The French authorities met the suggestion in a most agreeable and conciliatory spirit. They asked, however, whether, if the low rates on American pork were restored the United States would reduce the rate on French champagne. This was not conceded, as it was claimed that the minimum rate on pork was a matter of right, having existed when the reciprocity agreement of 1898 was signed.

Owing to the friendly attitude of the French authorities throughout the negotiations it is expected that the readmission of American pork may lead to a further agreement on other articles discussed.

American Trade Prospects in France.

AN interesting suggestion as to increasing American commerce abroad is put forward by C. P. H. Nason, the capable and efficient United States Consul at Grenoble, France. Mr. Nason says: "I have often thought as American dentistry has planted itself in European cities and demonstrated the quality of its work by daily practice, so the planting of American stores on a smaller or larger scale with specific American goods—household utensils, furniture, tools, garden and field implements, shoes, threads, tongs, stove handles—scores of things I could name, would demonstrate their ability to 'meet long-felt wants' and assure to their promoters an ever-increasing patronage. Even with French high-tariff restrictions, I believe this could be successfully done, while at the same time it would stimulate native dealers to search after and keep on hand more and more of our goods."

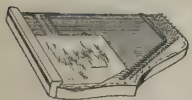
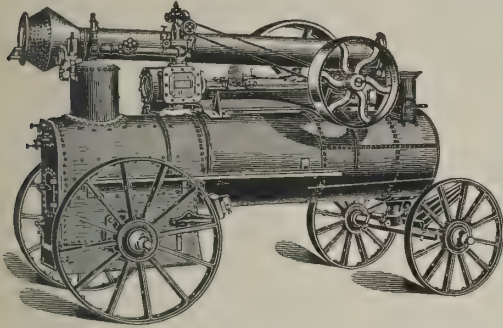
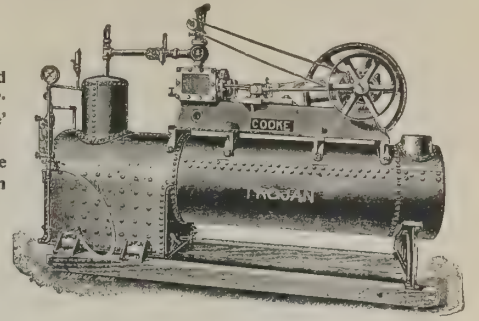
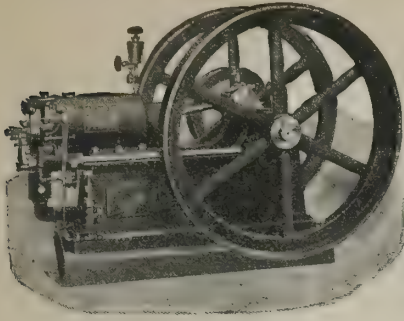
Mr. Nason mentions that among the new buildings and other city improvements of Grenoble during the year just past another "department store" on a large scale, made especially attractive and presenting many modern features, is worthy of notice. While it follows the lines of similar stores in French cities, it is noticeable that its goods, varied as they may be, are yet almost wholly "made in France." Mr. Nason says that it is lacking in a hundred and one commodities which go to make up "all the comforts of home" in the United States. Asked wherein it differed from an American store of the same class, he says: "In its limitations it lacks the product of other countries of the world in general and of those of the United States in particular."

Amity Between Britain and America.

IN an article on "The Progress of the World" in 1903 the *Review of Reviews* has this to say regarding one of the important incidents of the year and its effects: "The settlement of the Alaska boundary question has cleared the way for the consideration of various matters affecting the mutual welfare of Canada and the United States. If there are any unsettled disputes of any nature whatsoever between England and the United States, they are too inconsiderable to be known by the average citizen of either country. Never, indeed, since the revolution of the American colonies has this country been upon terms of such complete amity with the mother country as at the opening of this new year, 1904."

American Museum in Paris.—A cable despatch from Paris tells about the banquet of the American Chamber of Commerce in that city on January 16th and reports that the suggestion made by Mr. Gowdy, the American Consul-General, that the time had come for the establishment of an American museum in Paris, in which should be exhibited American raw materials and manufactured articles for the purpose of demonstrating to the French people the enormous resources of the United States, was received with great enthusiasm.

Steam - ENGINES—Gasoline.



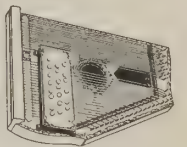
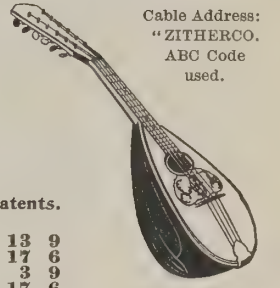
OSCAR SCHMIDT, Jersey City, N.J., U.S.A.

MANUFACTURER OF

MUSICAL INSTRUMENTS.

Special Offer for Export.—An assortment of 39 Instruments for **\$89.40** (£18 13 5) Net.
F. O. B. New York, as follows: All protected by patents.

				Retail.	Net.				
3	Guitar-Zithers,	No. 0,	27 strings, 3 chords.....	\$4.00	\$1.10 each....	\$3.30	£0	13	9
3	"	No. 2,	31 " 4 "	5.00	1.40 "	4.20	0	17	6
3	"	No. 2½,	41 " 5 "	6.00	1.90 "	5.70	1	3	9
3	"	No. 3½,	51 " 8 "	8.00	3.00 "	9.00	1	17	6
3	Tremolo Flat Mandolins,	No. 100,	made in bird's-eye maple, mahogany neck, selected spruce top, inlaid marqueterie and rosewood fingerboard.....	6.00	2.00 "	6.00	1	5	0
3	Tremolo Flat Mandolins,	No. 200,	same as above, but all rosewood with ebony finger-board.....	7.50	2.40 "	7.20	1	10	0
3	Mandolin-Harps,	Style A,	31 strings, 4 chords.....	6.00	2.50 "	7.50	1	12	1
3	"	Style B,	41 " 5 "	8.50	3.50 "	10.50	2	3	9
3	"	Style F,	51 " 8 "	10.00	4.25 "	12.75	2	13	2
3	Mandolins,	7 ribs,	maple and birch, cheapest and best made.....	3.00	1.05 "	3.15	0	13	1
3	"	9 "	rosewood and bird's-eye maple, mahogany neck.....	4.00	1.85 "	5.55	1	3	2
3	"	13 "	" red "	4.75	2.25 "	6.75	1	8	2
3	"	15 "	" mahogany neck.....	5.50	2.60 "	7.80	1	12	



We will furnish the complete assortment, or any portion of it, at the prices quoted above. Order through any reliable exporter.



White Enamel Refrigerator Co.,

Owners and Manufacturers of

Bohn's Patent Dry Air Syphon System of White Enameled Refrigerators.

The Bohn Dry Air Syphon System insures a low and uniform temperature, ranging from 38 to 48 degrees Fahrenheit. With our Enamel Lining, you need only to wipe the food compartments with a damp cloth to clean perfectly. The only absolutely sanitary refrigerator made.

Adopted and used exclusively by the Pullman Company for all of their Dining and Buffet Cars. Pennsylvania Lines, New York Central, Michigan Southern, Union Pacific, Canadian Pacific and all other railways throughout "the States" and Canada as well as by thousands of homes, hotels and clubs.

For Foreign Markets Only.

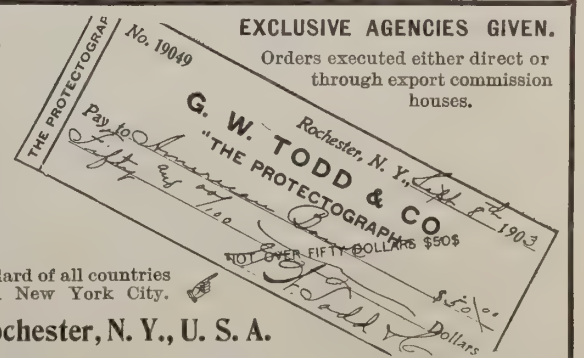
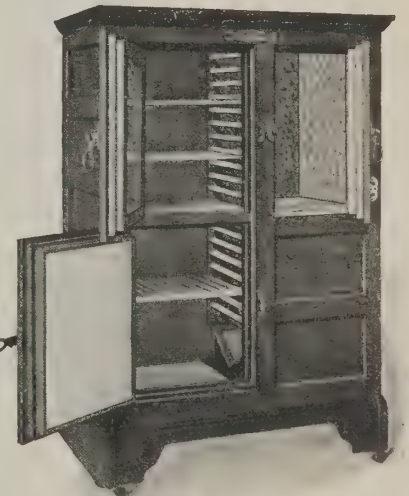
The prices here quoted includes boxing ready for transportation and delivered F. O. B. cars at New York City.

No. 2. Style "A." Panel Door. Price, \$23.00. Outside measurements (inches): Width, 38; depth, 21; height, 44. Weight, boxed, 278 pounds.

No. 3½. Style "D." Panel Doors. Price, \$32.00. Outside measurements (inches); Width, 38; depth, 21; height, 55; weight boxed, 360 pounds.

NOTE.—Orders received direct, or through export commission houses. When ordering through the latter, to avoid errors, please mail us a duplicate of order.

Our forty-page catalogue, illustrating and describing the various styles of White Enamel Refrigerators made by us, mailed postpaid.



Russia and Japan Use American Ships.

SHOULD war eventuate in the Far East between Japan and Russia, the unusual spectacle will be presented of American skill being pitted against itself in modern powerful vessels being lined up against each other by any naval battle that would take place. The newest warships of both nations have been built in the United States. Notable in this class are the Variag of the Russian navy, and the powerful Kasagi of the Japanese navy, both of which "crack" vessels were built in the United States within five years. These two cruisers are of about the same tonnage and speed, and would be pitted against each other. The navies of the world are particularly interested in the prospective war between Japan and Russia, as a naval conflict would bring into action warships of both countries built in the United States. What the result of such a combat on sea would be is problematical.

The Imperial Japanese cruiser Kasagi is the equal in materials and workmanship to vessels of the corresponding type in the United States navy. The armament of the Kasagi is two 8-inch quick-firing rifles, ten 6-inch quick-firing rifles mounted in broadside, with secondary battery of twelve 12-pounder quick-firers and six 2½-pounder Hotchkiss guns. There are five torpedo tubes for 14-inch torpedoes. The vital parts of the Kasagi are protected by a steel deck having a maximum thickness of 4½ inches on the slopes and 1½ inches on the flat, beginning 4 feet below the load-water and rising to a height of 1 foot above it. In no respect of plans, construction or arrangement is the Kasagi excelled by any vessel of her type and class, while but few equal her.

It was in 1893 that Vice-Admiral Nicholas Kāznakoff visited the United States in command of a Russian squadron. During his stay here he thoroughly examined the work in hand for the United States navy, and expressed to the president of one of our shipbuilding companies the opinion that the Imperial Russian Government would be inclined to place orders here for two or more ships upon suitable application. This led to a considerable correspondence between the head of the shipbuilding firm on one hand and Admiral Kaznakoff and other leading spirits in the Russian navy on the other, with the result that at the beginning of 1898 two contracts were signed, one for the construction of a first-class protected cruiser called the Variag and a first-class battleship called the Retvizan.

The Imperial Russian protected cruiser Variag was completed and delivered to the Russian Government in 1900. She went immediately to St. Petersburg upon leaving Philadelphia, and was received by the Emperor and his people with great eclat. The Emperor was so pleased with the cruiser that he selected her to escort the Imperial yacht from St. Petersburg to Cherbourg.

The Variag has a speed of twenty-three knots per hour. The machinery was designed and calculated to develop 20,000 I. H. P., and is capable of doing so if required. The vessel is designed to fulfil the highest requirements of a high-speed protected cruiser, carrying a large battery of quick-firing guns and provided with an unusually large number of water torpedo tubes.

The battery of the ship is as follows: Twelve 6-inch 54-caliber rapid-firing guns, twelve 50-caliber rapid-firing guns and six 3-pounder Hotchkiss guns. The torpedo battery consists of one bow tube, one stern tube and four broadside training tubes. The vessel carries the following armor, all treated by the Krupp process: Main water-line belt for a length equal to two-thirds the length of the vessel and with a thickness of 9 inches. Casement armor, 6 inches in thickness, extends above this to the line of the main deck, and armor of 5 inches extends to the line of the upper deck, protecting the 6-inch guns. All the armor extends for two-thirds the length of the vessel. Forward and abaft these limits the vessel is fitted with nickel-steel armor 2 inches in thickness to the bow and stern, respectively. The amount of coal carried at trial displacement was 1,016 tons, and the coal bunker capacity allows for a radius of action of 8,350 miles at ten knots speed.

Some Comment on Japan's Prestige.

THERE can be no question of the interest that is taken in America in the results of the dispute between Russia and Japan. America has the friendliest feeling for both nations. It is an unquestioned fact that neither nation wishes war unless it must happen to preserve the dignity and rights of one or the other. Without going into the merits of the unfortunate controversy, the following observations in the New York *Tribune* regarding the new progressive Japan will be read with interest:

"By no means the least interesting and auspicious feature of the present controversy in the Far East is the position which Japan occupies in the sight and esteem of the world at large. The prestige which that remarkable nation has gained and holds has probably never been rivalled by that of any other in similar circumstances. Men who are not yet willing to be considered old remember when Japan was scarcely open to the world, and had scarcely begun to emerge from barbarism—when the world generally spoke of Japan much as of Burmah and Zanzibar and the Fiji Islands. Men still young remember when Japan threw off the fetters of mediævalism and adopted a constitutional and representative government. It seems only the other day that extra-territorialism was abolished, and all other discriminations, and Japan was treated as the legal peer of other nations. It was two years ago in January that Great Britain took the unprecedented step of making a treaty of alliance with Japan, treating the latter with respect and esteem similar to that which France pays to Russia in the Dual League, or that which the members of the Triple Alliance pay to each other.

"To-day, then, Japan stands unchallenged among the great powers of the world. She is the peer of any of them in legal standing. In sentiment and sympathy she actually outranks at least one of them. There can, we think, be no doubt that the preponderance of sympathy the world over is with her and against her adversary in the present quarrel. That is to say, Europe and America side with the Asiatic power of the yellow race against a European power largely of the white race. That is an extraordinary state of affairs, but the reason is not difficult to discover. It is partly because Japan is seen to be fighting the battle of civilization and progress. She is contending for the interests of Europe and America, against influences that would impair them. But that is not all. Japan is also seen to be worthy of the esteem she is receiving. That is, perhaps, the dominant feature of the case. In wise statesmanship, in shrewd diplomacy, in generous spirit, in earnest desire for peace with justice and honor, and in intelligent self-control Japan has won the admiration of the world. It is to be doubted if any other nation in similar circumstances has ever acted more creditably."

American Motors in New London Tube.

THE new two-penny tube in London is due to be thrown open on February 1st, and our London readers will know how it works before this paper reaches them. The tunnel is British, of course, but there is so much of the American about it that English-speaking people everywhere, regardless of national affiliations, will watch its operation. The new tube is nearly four miles long and brings a very populous district in touch with London. This tube is a distinct advance on the similar railways already working in London. Some of those who made the official experimental trip last month pronounced it the best underground railway so far constructed in the world.

The tunnels have a 16-foot diameter, as compared with the 11 feet 8 inches of the Central London Railway, and this permits the use of larger rolling stock. The cars are somewhat longer than those in use in other tubes. They are built of teak, with a height of over 12 feet, which makes them roomy and airy. They are, in fact, of equal width with the widest carriage that can be run on any British railway, the bulging sides making for greater comfort. All the seats are crosswise, with a center aisle. There are doors in the center of the cars for emptying and filling with great celerity at the terminals. The stations along the route are roomy, with big lifts and wide terminals. All the structures underground, including even the signalman's cabins, are fireproof. The trains are made up of seven coaches, three of which are motor carriages. One of these is placed in the middle of the train.

"An all-British two-penny tube!" declares the *St. James Gazette*, describing the railway, but, according to a statement issued by the contractors, the Brush Electrical Engineering Company built many of the carriages at their English works. They are supplied with Westinghouse air brakes, and the motors were built by the General Electric Company of America, while the driving system is the Sprague multiple unit.

Our Agricultural Implements in Russia.

THOMAS E. HEENAN, United States Consul at Odessa, says: "The year 1903 has been a very satisfactory one for the sale of agricultural machines and implements. The American articles in this line continue to hold the field and their number is increasing. Harvesters, binders, reapers, mowers, rakes, corn-shellers, etc., have always been in favor in the country and their sale has been large. The American plow has now secured a permanent foothold in Russia, and its future promises to be a very satisfactory one. The sale of garden tools of American make shows an annually increasing market in this country. Tools of various kinds, representing the finer qualities of the American articles, are also found on this market and are meeting with high favor. Knives for harvesters, mowers, reapers, etc., had a very large sale during the present year (1903) as well as in 1902. The American automobile made its debut at Odessa for the first time during the present year and a few machines were sold which have given great satisfaction."

Warlike Countries Buyers in America.

INFORMATION came last month to the United States Treasury of the arrival of large quantities of Japanese gold at the United States port of San Francisco. In nearly all cases this gold has been deposited in the Sub-Treasury at San Francisco and made immediately payable in New York. It is evident to the Treasury authorities that Japan is paying as she goes. About \$5,000,000 in Japanese gold was received in the United States within one fortnight last month to pay for wheat and flour and munitions of war. Russia is also buying heavily in the United States, and this fact is shown by the record of recent exports from this country to Russian ports.

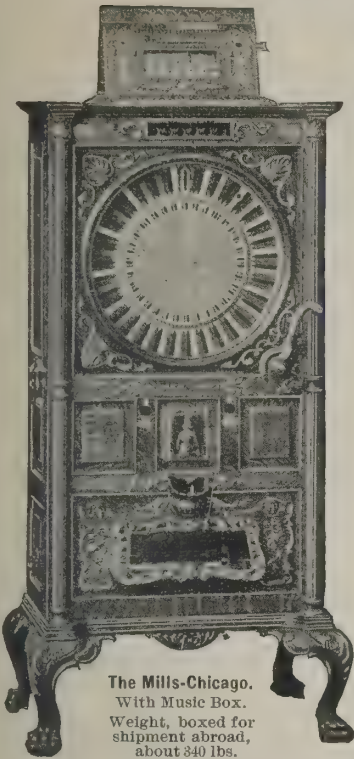
Our Trade with Korea.—Recent United States Government statistics show that the value of American petroleum consumed in Korea in 1901 was over \$300,000; machinery and supplies, \$250,000, and electrical goods and lumber, \$236,000. The trade has since greatly increased, but accurate figures are not available.

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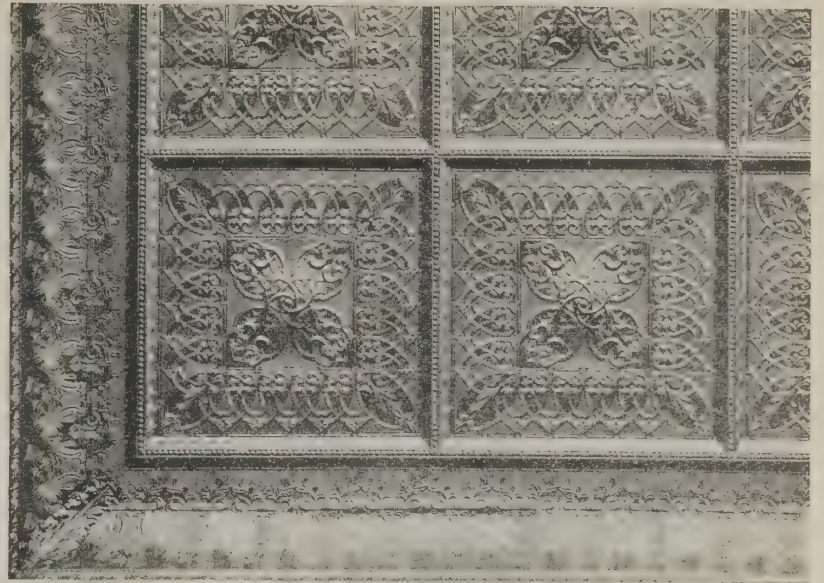
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Manufacturer of

Hammocks, Mosquito Nettings and Canopies, Dress Linings, Window Screen Cloth and School Bags.



No. 122E—Size, 35x78 inches, with spreader; assorted colors. Price, \$5.80 (\$1 41) per dozen net.

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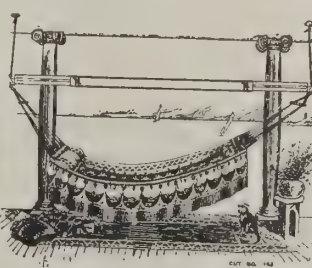


No. 64SE—Size, 43x82 inches; with pillow, wide valance and spreader; assorted colors. Price, \$26.00 (\$5 81) per dozen net.

No. 64SE—Same as above, except "narrow valance" in place of "wide valance." Price, \$21.50 (\$4 10 0) per dozen net.

Descriptive and Illustrated Catalogues furnished on application.

We manufacture Hammocks of all sizes and prices. The Utopia Hammock is patented in all the large countries of the world.



No. 726—Trapeze with Arawana Hammock. Trapeze to be used with this or any hammock. Price, of trapeze alone, \$19.50 (\$4 20) per dozen net.

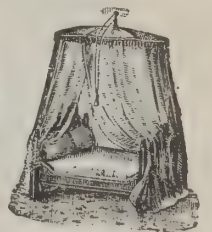
No. 44SE—Arawana Hammock (without trapeze); size, 39x81 inches; with spreader, pillow and wide valance; assorted colors. Price, \$20.95 (\$4 21) per dozen net.



No. 72S—Hammock Support with Utopia Hammock. Adjustable support (to be used with this or any other hammock). Price, of support alone, \$45.00 (\$9 61) per dozen net.

No. 687—Utopia Hammock (without support); with spreader, adjustable pillow, wide valance and seat. Price, \$39.90 (\$8 50) per dozen net. Adapted for indoor and outdoor use. Degree of recline easily changed from sitting to sleeping position by extending or contracting the frame.

These prices are NET, free on board New York.



No. 689—Canopy, Umbrella Top; 90 inches high, 9 yards around. Price, \$1.05 (\$0 53) each net.

Plain Mosquito Netting, 70 inches wide, per piece of 8 yards; white, 35¢ (\$0 11); colors, 37¢ (\$0 11) net.



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COAL TO BE CHEAP AS CLAY.

American Inventor Believes He Has Found a Process to Cheapen Fuel's Cost.

THERE is an old saying that there is nothing new under the sun, but a resident of the State of Indiana, U. S. A., has undertaken to make artificial coal, using clay, or ordinary earth, as a substitute for coal. Our readers will be skeptical, as we are, regarding the discovery, but the following account, published in an American newspaper of influence and standing, will be found interesting: "Common dirt—earth of any kind—forms the base of the artificial fuel, which is cheaper and better than any heretofore used, either natural or artificial. Many men of scientific learning have investigated the invention, and all unite in saying that this inventor has undoubtedly found a substitute for coal. While working out the problem of rubber tires for vehicles he discovered a chemical action that gave him the idea of trying to invent a process by which he might manufacture artificial fuel.

"The artificial fuel produces a more intense heat and is more lasting than the natural coal. It is attended by slight waste, a fine white substance being the only residue. It is smokeless, generates no gas, and, what is most gratifying, can be produced at less cost than the mere primary expense of carrying the natural product to the mouth of the mine.

"The failures of the past in the attempt to produce an artificial fuel may be attributed to the fact of the inability of inventive genius to furnish a quantitatively preponderant base that, in combustion, would not too readily sacrifice its chemical coagents. This much-coveted base is the eminent feature of this man's invention. For each ton of fuel he creates he employs 1,800 pounds of solid and 200 pounds of chemicals. His formula is fully protected by patents.

"The fuel is composed of any adhesive soil, or clay, compounded with chemicals, and can be manufactured either soft or hard, to meet the consumer's demand, the soft burning the more readily. The softer substance resembles gunpowder. The color is that of the natural coal, but dull, having no gloss whatever. The color is intensified by heating, by which action it is hardened. The hard coal is a jet black in color. It may be rendered so hard as to ring like steel when struck. Its density depends on the pressure brought to bear on it in the process of manufacture.

"When first ignited a tiny yellow flame is produced. It soon forms a bed of incandescent coal, from which a faint bluish blaze emanates. If the fuel is formed in blocks or pencils it retains its form until the mass is reduced to white ashes. As it contains no fuel gas it is perfectly safe. That this artificial has more than double the heat-producing capacity of the natural coal has been proved by various tests."

As to this discovery we will advise our readers further when the new fuel has demonstrated its practical value; if it is not, as we suspect, of less merit than our contemporary apparently believes.

Our Shoes Meet with Favor in Austria.

AMERICAN shoes are growing in popularity in the foreign markets. Austria likes them, as well as other countries, and W. A. Rublee, the

United States Consul-General at Vienna, has this to say about the development of sentiment in favor of American footwear: "The opening within a few weeks of a large retail shoe store in the center of Vienna's shopping district, where only American-made shoes will be sold, is a significant tribute to the superiority of American shoes. Shoemaking is one of the Austrian industries which has always flourished and which enjoys a considerable export trade. Sales of American shoes in the Austrian markets have, therefore, met with many difficulties, and there has been until recently a more or less general belief among Austrians that competition with the Austrian product in the home market could not be successful, both on account of the good quality and the cheapness of the home-made shoes. Besides, public opinion and Government influence favor protecting the home industry.

"The growing demand for American-made shoes which has now resulted in the establishment of a shoe store in which American shoes are to be sold exclusively proves conclusively, however, that American footgear has made its way into public favor strictly on its merits, and that the trade is likely to have a steady increase in the future. American shoes have been sold in Vienna during the last few years in small quantities with gradually increasing success, being handled by a number of stores side by side with Austrian shoes; but up to the present time there has been no store where there was a large stock to select from, and the test of the market has, therefore, not been wholly satisfactory.

"The project to do business on a larger scale has been undertaken by the proprietors of a leading Viennese shoe store who have during the last two years bought small consignments of American shoes experimentally. They have now become satisfied that there is a permanent and growing demand for these shoes that warrants catering to the wants of Viennese buyers on a more extensive scale, and they have decided to open a separate store to be known as the American Shoe Store of Vienna. A large store has been rented for this purpose, and the first order to American manufacturers is for 3,000 pairs of shoes. The men back of this enterprise are successful Viennese dealers in shoes, thoroughly in touch with the market, and they consider the success of their new venture assured. Their customers to whom they have sold Ameri-

can shoes are so pleased that they will never again wear shoes of any other make.

"American shoes impress Austrian buyers as possessing far greater durability, superior comfort and better workmanship. They are more expensive than the Austrian article, but customers are satisfied to pay more, as they consider them worth more. The Austrian shoes, though hand-made, are admittedly inferior to the American machine-made shoes."

Consul-General Rublee also reports an increased demand in Austria for American shoemaking machinery.

Peculiarities of the Playing-Card Industry.

ON my friend Raymond's desk was a deck of playing-cards. There was nothing unusual about that, for there are always playing-cards on Raymond's desk. Not that he is given to interspersing the day's work with an occasional hand at poker or anything else, but because Raymond is interested in a company that manufactures most of the playing-cards in the world.

This particular deck of cards had very beautiful backs and gold edges. I picked it up to examine it more carefully, and turned the pack over to look at the faces of the cards. The first I saw was the ace of spades. So was the second. I "riffled" them and then rubbed my eyes. They were all aces of spades. I looked at Raymond in surprise.

"What sort of a cold deck is this?" I asked.

"Nothing cold about it," he replied. "That is simply a lot of extra aces, left over from samples of decks we have just sent to France."

"But don't they use the ace of spades in French card games?" I feebly inquired.

"Oh, yes," said Raymond, "but the Government makes that card."

"The French Government," he continued, "controls the monopoly in the manufacture of many things, such as tobacco, wines, etc., exercising a sort of overseership in their making. This extends to playing-cards. Every pack issued in France must have the imprint of the Government. But the Government does not care to attend to the making of the whole pack, as it would entail the erection of a bigger plant than it wishes to handle. So the contract is let to us. We manufacture the cards and send them over to France, but the ace of spades is manufactured in France and put into every deck under Government supervision, the pack being then sealed. This leaves us thousands of aces of spades every year, which we use as samples. We could, of course, print a deck with only fifty-one cards, but the ace of spades is as good for advertising purposes as any other card, so we strike it off and keep it out of the orders for the French Government.

"In this connection we manufacture nearly all the cards that are used in Germany, also, and practically furnish all of Europe with its gambling material. Every card used at Monte Carlo comes from our factories, so that even if Americans are among the victims of that paradise of gambling they can glean some satisfaction in knowing that they have lost by Yankee cards, at any rate.

"The cards for every European country are a little different from those of any other, not in the general arrangement of the spots or the number in a deck, but in the designs. It would make a German nervous to play with French cards, for instance.

"Our manufacturers, however, are not confined to America and Europe, as a little instance will prove to you. Here is a pack of Japanese cards. It was brought to me by a friend who was traveling in the Orient and thought she would like to bring me some little souvenir. Knowing of my connection with the playing-card industry, she fancied that Japanese playing-cards would be acceptable, so she bought these in Tokio. One evening shortly after her return she came to the house and presented me with these. I thanked her. She commented on how different they were from American cards and asked me if I had ever seen any before. I hated to shatter her idea that the present was a great surprise to me, but I had to. Opening the package I found one card and held it up for her to look at.

"In a prominent place in English characters she saw the words, 'Manufactured by So-and-So Playing-Card Company, America.'"—*New York World*.

Cotton Export Record Broken.—"King Cotton" made its greatest record in American export figures of the calendar year 1903. From 1883 to 1903 cotton exports averaged a little more than \$750,000 a day. In 1903 they averaged more than \$1,000,000 a day; in the last three months of 1903 they averaged more than \$2,000,000 a day, and in the closing month of the year nearly \$2,500,000 a day.

French Paper Mill Uses American Invention.—C. P. H. Nason, United States Consul at Grenoble, France, writes: "As showing a tendency in this locality to accept any marked American improvement, a plant for the making of paper-mill machinery—at Rives—has recently contracted with an American inventor for the control of a patent covering a machine for the quicker and more economical drying of paper."

Folding Hat Box.—An American has recently invented a hat box of the type of the collapsible drinking cup which has been in evidence for so many years. The sections are all united by a flexible cloth lining, which is drawn tightly from top to bottom when the box is expanded, and lies loosely between the sections when they are collapsed.

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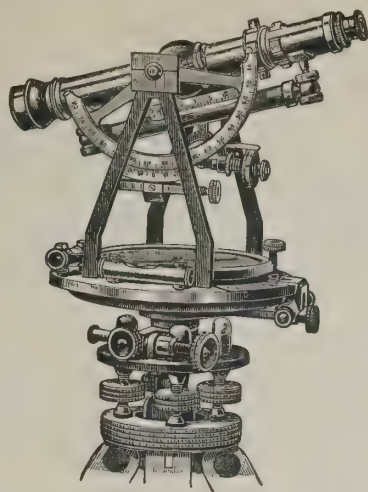
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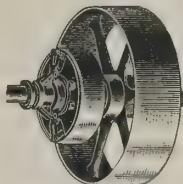
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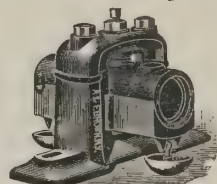
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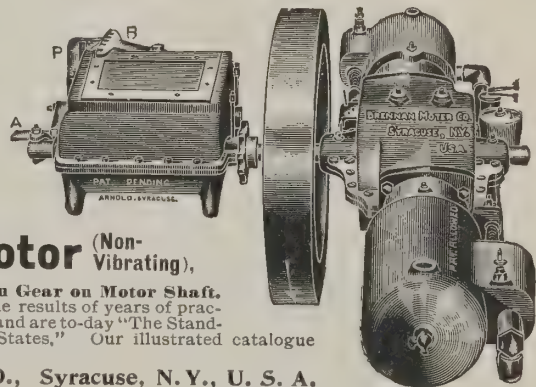


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JOHN I. BROWN & SON, Proprietors, Boston, Mass., U. S. A., and London, England.



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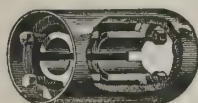
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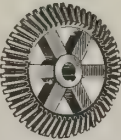
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PORTABLE OVEN No. 114—Has three shelves (28x20 inches each shelf) holding at one baking Thirty Large Loaves of Bread. Weight, boxed, 300 pounds. Price.....\$ 37.50

PORTABLE OVEN No. 116—Has five shelves (33x20 inches each shelf) holding at one baking Sixty Large Loaves of Bread. Weight, boxed, 500 pounds. Price.....\$ 62.50

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High-Grade Fire Apparatus,



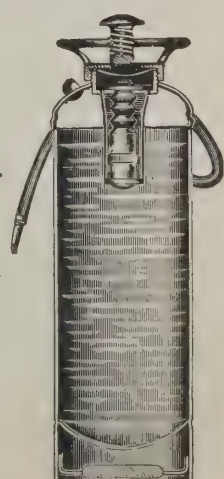
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For Home, Factory, Store or
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Will Be the Biggest Fighting Ships in the World.

A WRITER in the St. Louis *Globe-Democrat* tells an interesting story about two coming monarchs of the sea that are being built for the American navy. These vessels are the new 16,000-ton battleships Connecticut and Louisiana. They are the largest fighting vessels this Government has ever built, and will exhibit several entirely new features of construction and armament. They will be clad in a complete coat of steel, instead of depending merely upon an armor belt for their vitals; they will carry rapid-fire weapons of heavy caliber and pattern hitherto unknown, and they will utilize electricity for aiming as well as firing their guns.

The armor of the Connecticut—the vessels are twins, exactly alike—will cost \$1,500,000, and she will carry \$1,000,000 worth of guns. Her steel protection, instead of being concentrated in a water-line belt amidships, leaving the ends of the vessel exposed, after the method hitherto adopted, will extend from bow to stern, and above the main water-line belt will be three thinner belts—the lower casemate, upper casemate and superstructure armor.

The two battleships will be the most formidable fighting vessels on the seas. Each of them will have four 12-inch guns in the turrets, which will throw projectiles weighing 850 pounds with a velocity of 2,800 feet, or a little over half a mile a second. This velocity is one-fourth greater than was obtained with guns of the same caliber on the old Iowa, the improvement being due in part to the new smokeless powder, but mainly to an enlargement of the powder chamber, which is thus enabled to hold a larger quantity of the explosive.

The guns next in size will be 7-inch—a caliber unknown hitherto in our service. Taking the place of the 8-inch cannon mounted on the Indiana and other battleships, they will be much more manageable and at least equally effective. They will be of the rapid-fire pattern, delivering a stream of projectiles weighing 165 pounds, each of which will carry a bursting charge of 13 pounds of black powder. These explosive shells, for which armor-piercing projectiles may be substituted when desired, will travel at a rate of 3,000 feet a second, and the damage done by them will be something frightful.

The explosion of such enormous charges of gunpowder as are required for these huge weapons—the 7-inch caliber takes 101 pounds for each shot—produces tremendous shocks aboard ship, and the 12-inch guns of the Connecticut and Louisiana will be made 5 feet longer than ordinary, so that their muzzles shall project far beyond the vessel's side when trained abeam. Thus the blast from them will be less likely to affect the smaller cannon on the deck below. All of the new projectiles, by the way, are made with thicker walls, to resist the higher pressure of explosion, and many of the older shells in stock have to be thrown away because too thin.

Hitherto most of the guns of the secondary batteries have been 3-pounders and 6-pounders, but on the two new battleships these will be replaced by weapons of 3-inch caliber, rapid-fire, discharging 14-pound shells. The latter can be fired nearly as fast as the 3-pounders, and they will inflict vastly more damage. Twenty of them will be carried by the Connecticut, and it is easy to imagine what tremendous execution they will be capable of, delivering a veritable hail of bursting projectiles.

The new battleships will be provided with a new kind of shell which, while effective as an armor-piercer, contains a large bursting charge of gunpowder. Up to now the armor-piercing projectile, utilized exclusively for that purpose, has been solid and non-explosive, but this novel agent of mischief is capable of passing unbroken through armor plate a foot thick, thereupon bursting and doing an amount of damage well calculated to demoralize the enemy. Such a shell, landing in the engine-room, would be likely to put the machinery out of business.

Electricity will be employed on the Connecticut and Louisiana for purposes to which it has not hitherto been applied. There will be electric ammunition conveyers, and it is probable that the larger guns will be aimed as well as discharged by electricity. In a seaway the roll of a ship interferes a good deal with accurate marksmanship, and it is now an accepted theory that, in order to do satisfactory shooting, there should be continuous aim—that is to say, the guns should be kept steadily pointed at the target, no matter how the vessel moves. One method of doing this is to keep the weapon horizontal by an automatically controlled electric motor.

To train American gun-pointers in the business of hitting the target vast sums of money are being expended by the Navy Department, three battleships of the North Atlantic fleet having used up a quarter of a million dollars' worth of ammunition within twelve months. For this purpose smokeless powder is employed almost exclusively; the Government has not made or bought any black powder since the Spanish war, except for loading explosive shells and making fuses. From 2,000 to 3,000 pounds of smokeless powder are turned out every day at the factory at Indian Head, on the Potomac River, near the capital city of Washington, and enough, in addition, is purchased from private concerns to raise the supply to 10,000 pounds a day.

The Government factory at Indian Head comprises twenty-eight buildings, which are scattered widely over about 300 acres of ground, so that the destruction of one of them may not affect the others. In July of last year one of the powder houses was struck by lightning and wiped out. It is not known what was the cause of a similar catastrophe at Mare Island, California, on the Pacific Ocean, not long previously, where 300 tons of smokeless powder blew up.

Smokeless powder is likely to decompose and deteriorate—a trouble against

which the United States Navy Department has to be constantly on its guard. In order to detect such deterioration when it occurs the curious device has been adopted of mixing with portions of the explosive a small quantity of a coal tar coloring called "rosaniline," which imparts to it a deep carmine hue. If decomposition occurs the powder thus treated loses its color.

For practice in shooting at night the United States Navy Department has been using recently a new contrivance called a "tracer"—a small attachment to the fuse of a shell containing a brilliantly burning composition, by which the projectile is illuminated during its flight through the air. Thus the gun-pointer following the shell with his eye, is enabled to watch the path it takes. Some of our war vessels have been supplied with these tracers for experimental use at sea.

The United States Government has now twenty-five war vessels building, including nine battleships. Their armament will cost \$25,000,000, and the armor for them will come to another \$25,000,000.

Near the Limit in Size of Big Ships.

A WRITER in the *Engineering News*, in discussing the question as to where the building of big ships will end, sustains the view taken in recent issues of THE AMERICAN EXPORTER and says: "Various authorities in engineering have attempted to predict the future rate of progress in marine construction, and the fact that at a single stroke 3,000 tons have been added to the size of the record vessel will doubtless be made much of. Nevertheless, there is much reason to believe that we are near the limit in size of ships, for the present at least, and there may even be a reaction. The size of ships is governed by the depth of the channel entrances to seaports, and these latest huge vessels draw so much water that they can only enter a few ports and at only a very few can cargo or passengers sufficient to fill them be secured.

"Besides this, it will readily be concluded that the reason why bigger and bigger ships have been built is purely a commercial one. The question 'Will it pay?' is the question to be answered in determining whether the size of ships is to go on increasing, and if so to what extent. It will be readily granted that a ship of 10,000 tons can be operated more cheaply per ton of freight carried than one of 5,000 tons, provided the volume of traffic is sufficient to keep her employed, and provided, also, that cargo-handling appliances are such as to keep down delays in port. But, granting this, it will readily be seen that there is not a like saving to be made in again doubling the size and going from 10,000 to 20,000 tons. Perhaps under certain circumstances the 20,000-ton vessel may be worth while, but even if this is the case it does not follow that a still bigger vessel would be still more profitable. It must be remembered that these very large vessels cost considerably more to build per ton of freight capacity than vessels of moderate size."

Unique Features of a World's Fair Exhibit.

THE lumbermen of the United States have a club called the Hoo-Hoo, which is famous for doing unusual things. Its members have decided to have a clubhouse for use at the American World's Fair this year. The house of Hoo-Hoo, as it will be called, will be erected almost in the center of the Exposition grounds, about 300 feet from the Fine Arts Building. It will be of the bungalow type of architecture, built entirely of wood, in order to show the possibilities of the forest products of the United States. It will be 123 by 97, with spacious veranda extending around the entire structure, a special feature of this veranda being that access will be possible into every room by means of large French windows.

The building will contain an office, check-room, telephone booths, large rotunda with magnificent stairway leading to the second floor, and an auditorium with a seating capacity of 400. This room will be beautifully finished in mission oak and will be used for holding lumber conventions, concatenations and as a banquet hall.

There will be six luxurious lounging and writing rooms, equipped with every convenience, for the members of the club, one-half of the building being devoted to the ladies and the other to the men. A commodious reception room with large fireplaces, a retiring room, etc., will be especially fitted up for the ladies. One of the main features will be a newspaper room, arranged in an artistic manner, with panels of possibly thirty-five woods, showing a harmonious blending of colors.

The building will be wainscoted throughout, each room being finished in a different kind of wood, while the walls and ceilings will be handsomely decorated and rich colored draperies and rugs will be used for adornment. A special feature of the furniture will be a color scheme, including the hangings and decorations. The various lumber manufacturing associations of the United States will finish one or more of these rooms, each in the particular lumber in which they are interested.

Will Handle 96,000 Pounds of Steam an Hour.—The steam power plant of the St. Louis Exposition, now being built by Westinghouse, Church, Kerr & Co., will be fitted with two large central condensing units, each consisting of a 40-inch elevated condenser capable of handling 96,000 pounds of steam per hour. These condensers are being built by Henry R. Worthington, of New York City, who will supply centrifugal pumps for handling the circulating water.

Biggest Photograph Is Taken for American Exposition.

THE largest photograph ever taken in the world has just been produced for exhibition at the American World's Fair this year. While the feat is of no value, from the standpoint of international trade, yet it shows the advances made in this branch of an important art industry. The photograph covers 195 square feet of space. In point of size alone this photograph breaks all previous records with a very good margin to spare. Apart from that the photograph has been pronounced one of the most beautiful and perfect ever developed and printed. The toning and fixing of the photograph, which is in one piece and measures 39 by 5 feet, was a gigantic task, which every photographer, both amateur and professional, will readily appreciate. The average photograph is toned and fixed in a bath about the size of an ordinary soup plate. This record-breaking photo required three specially constructed baths, each one measuring 45 feet long, 6 feet wide and 3 feet deep, and containing sufficient solution to "tone" thousands and thousands of photographs of ordinary dimensions.

The scene selected for the photograph embraces the beautiful Bay of Naples. The camera was mounted on the battlements of the Castle of San Martino, which looks down on the city of Naples, hundreds of feet below. Miles away in the distance on the left Vesuvius looms up impressively. In the enormous width of the photograph, 39 feet, the whole panorama of Vesuvius and the city of Naples is spread out with wonderful verisimilitude before the spectator. When the original negatives for the photograph were taken plates 9 by 11 inches were used. Each of these small negatives embraced a certain portion of the entire scene contained in the completed panoramic photograph for the World's Fair. To produce the entire photograph it was necessary to piece the small negatives together, fitting them in exactly where they belonged, and then printing an enlarged copy by the method of enlarging familiar to all photographers.

Twenty men were required to complete this one photograph. They included carpenters, chemists, photographers, surveyors and artists. The carpenters built the enormous baths in which the photograph was to be chemically treated. The chemists mixed up the extra large doses of developing, toning and fixing solutions required. The photographers attended to the actual photographing, the enlarging and printing. The surveyors marked off the territory each 11 by 9 plate was to cover, so that there would be no danger that any part of the picture would be missing when the time came for putting the completed photograph together. The artists were there to add a few finishing touches to the photograph, although strange as it may seem, the huge picture came out so sharply and clearly that there were very few blurs to be smoothed over or indistinct corners to be strengthened with a little line or dab of paint by the touching-up artist.

Probably the most interesting features of the entire production of the enormous photograph was the developing of the enlarged print. This was made in one piece on a strip of specially made photo printing paper 40 feet long and 6 feet wide. The printing was done on a dark night, and in the open air by artificial light and then the print was reeled around a big wheel 15 feet in diameter for the purpose of being developed. This was an exceedingly delicate operation. The developing solution was carefully and evenly applied while a man perched on a ladder at the top of the wheel hosed the huge print in order to retain local development. Other expert photographers examined the print as the wheel revolved slowly and treated other parts of the picture, which required forcing with a sponge filled with developer. After the print had been satisfactorily developed, it was taken off the wheel and passed into the toning and fixing baths, where the print was chemically treated to preserve it from fading.

Reversible Turbines Suggested for Autos.

A CORRESPONDENT at St. Louis, U. S. A., sends to the *Motor Age* a suggestion regarding the applicability of turbines for use in the propulsion of automobiles. This is the first suggestion of the kind that we have seen, and some extracts from the correspondent's letter will be found interesting: "The turbine should form an ideal motor for automobiles, inasmuch as it possesses but a single moving element—the disk carrying the inclined vanes—and thereby doing away with all vibration, such as possessed by the reciprocating steam or gas motor. Furthermore, the turbine has proved itself to be one of the most economical machines for the production of power. Turbines are now in use producing power at much less cost per horse-power than that of the most economical reciprocating steam engine.

"One of the greatest drawbacks of turbines is their high rotative speed, as many of them make from 10,000 to 30,000 revolutions per minute, and it is necessary to reduce this speed to something like 100 revolutions per minute in order to successfully apply the turbine to an automobile. Another drawback has been the fact that, like the ordinary engine, the usual steam turbine has but a single main shaft. The writer has devised a new form of simple turbine, which may be driven by steam, compressed air or other gas."

The correspondent gives an illustration of his device. One drawback to the turbine has been the fact that it could not be reversed. The turbine shown by the St. Louis man obviates that objection and is readily reversible, which is of more importance than he seems to realize. Regarding this he says:

"One main shaft has fixed upon its inner end a disk provided with a series of concentric rows of inclined blades, and this disk is caused to rotate in a given direction by the discharge of steam upon its inclined blades. Another

disk is fixed upon the inner end of the opposite shaft, and is adapted to be driven in an opposite direction from that of the first disk by means of steam directed against its blades. In order to reverse the turbine it will only be necessary to shut off the supply of steam from the peripheral jets and cause the steam to enter the inner jets, when the steam will pass outwardly and impinge upon all of the blades of both disks, and finally make its exit through the exhaust."

The St. Louis man, whose name is John C. Higdon, has made an important discovery, apparently, unless some of the turbine inventors have forestalled him, of which fact we have not been advised.

Recipe for a Successful American.

SIDE-LIGHTS on the qualities that go to make a successful American, as well as the possibilities that are encountered every day in the New World, are given in an article in the St. Louis *Globe-Democrat* concerning a prominent merchant of that city. The paper calls him a "merchant king," but Murray Carleton, whose life is narrated, would doubtless resent the application of the title, for we have no kings in the United States, at least by title. Mr. Carleton began life as a common ordinary printer's devil in a little country newspaper office at \$3 a week, and now a merchant of more than ordinary wealth and influence. During the intervening forty years he has had some experiences which any one would expect him to have had. Some extracts from the *Globe-Democrat's* article about him are interesting:

"Mr. Carleton is, above all things else, a religious man, who earnestly endeavors, so far as may be possible, to carry the principles of his religious belief into his daily life, and no one who is brought in contact with him for even a brief space of time can fail to feel that they are in the presence of a man honest and sincere to the core and ever trying to do just what is right toward all. Mr. Carleton does not talk religion; he does not preach morals; he merely gives the force of example to his own beliefs and lets it go at that.

"In his business Mr. Carleton is methodic to the extreme, and with his many diversified interests he must necessarily be so, for every minute of his working day must be made to yield seventy-five seconds of labor. His great mercantile establishment occupies by far the greater part of his time and interest, though the ramifications of his fortune have taken unto themselves so many paths that his time at the store is frequently broken into by their demands. At the store he will not think of anything else but the commercial side of his life, and when he devotes an hour to something else the mercantile establishment is dismissed from his mind altogether."

The story of his life is given in full, but the following epigrams summarize success as seen and won by him: "Success is the handmaiden of thrift and industry; have a definite ambition if you would avoid wasted energy; bad habits and bad company will undermine any man's chances in life; parents should inculcate a Christian life in their children by example; the child that has been properly trained seldom goes wrong; saloon companions may be good fellows, but hardly ever good friends; energy and perseverance are sometimes better than ability; there is no excuse for a lack of education; self-instruction is always possible and ever obtainable; a business house never fails to reward the attentive employee; the successful man, if he would remain successful, must keep hard at work; system and order facilitate the transaction of business."

Secures Safety to Ships at Sea.

ONE of the fast trans-Atlantic steamships has recently been equipped with an automatic device which robs ocean voyages of danger. Practical tests have been made, and it has been found easy to close the bulkheads by hydraulic pressure, operated from the bridge of the steamship. Pressure is supplied to all the vertical sliding doors by a main running the whole length of the ship, and which is in communication with four steam hydraulic accumulators which are of sufficient capacity when fully charged to supply a pressure of 500 to 700 pounds per square inch. They can close the twenty-three bulkhead doors of the ship in question in from ten to fifteen seconds.

As the accumulators and the hydraulic pump which supplies them are all above the water-mark, they would still be able to work if water got into the hold. A branch of the pressure main rises to the bridge, and the pressure can there be turned by means of a distribution box into either of two smaller pilot mains running the whole length of the ship, one for operating a controlling valve at each door, to close the door, and the other to open it.

In addition to the attachment on the bridge for closing the doors two other means are provided for cases of emergency. Should an explosion occur in the engine-room and steam fill the compartment, by turning down a lever which is connected with the controlling valve the door of the compartment will close and prevent the steam from filling the whole ship. Or should a leak start in any way in the hold of the ship the doors will close as soon as the water rises two feet above the bilge keel.

A warning that the doors are to be closed is given to the men who may be in the hold by means of a gong above each door, which is worked from the bridge, and which has to be sounded for twenty seconds before the door can be closed. The warning is also necessary to allow the men in the stoke-hole to get out of the way any coal which may be lying in the doorway, so that that door may not meet any obstruction. By means of a handle at the side of the door a man caught in a compartment may reverse the hydraulic pressure and open the door, which again will close automatically.



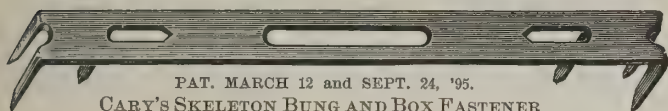
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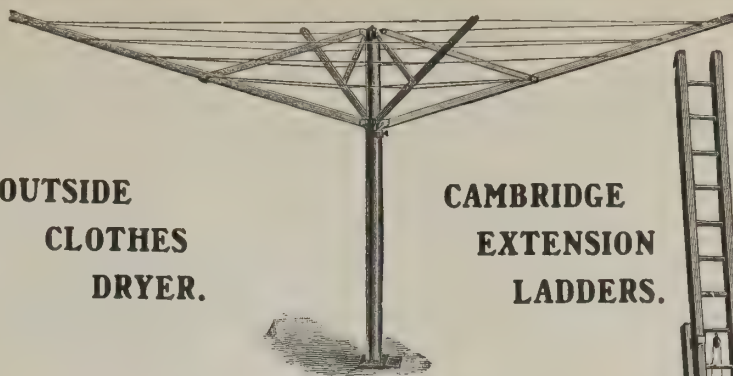
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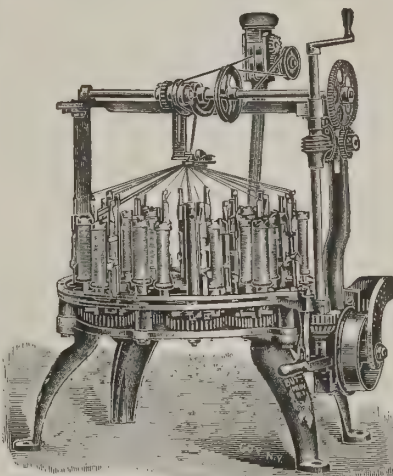
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Increased Use of Farm Telephones.

A NEW American industry—the manufacture of farm telephones—has sprung into existence in the last few years, and supports already a number of surprisingly large factories. Farm telephone lines are being extended through the country at a remarkable rate, and it will not be many years until every progressive farmer will have his telephone, which he can use to talk anywhere in the United States. The spread of telephony, which followed the running out of the fundamental telephone patents in this country, has had many striking developments, but none more remarkable than those which have given every farmer in the land the chance to rig up a telephone and thus put himself in direct touch with the outer world. The ubiquitous trolley, running out into the rural regions from the nearest urban centers, has done much to change the conditions of rural and agricultural life; but over and above all, the telephone is proving the instrumentality of what is, as a matter of fact, a new civilization.

Only those who have traveled of late through the rural parts of the great Middle States and of those in the Northwest can have the remotest idea of the manner in which, finding the telephone available and cheap, the farmer has seized upon it with avidity and connected himself up with some cooperative system in his own neighborhood, or again, with bolder effort, has pushed out and joined his own line with the network of some adjoining village. The cooperative principle has in this way received a new and striking exemplification, while the economic outcomes, even at this early stage, are so wide-reaching that it is hard to determine just where the effects of this change will stop.

It is estimated that during the last five years telephones have been put into nearly half a million rural homes. The farmer finds that with the telephone he can keep in touch with the market, selling his produce or live stock when quotations are the most favorable. By sparing himself and his help useless trips back and forth for the purpose of delivering his products, or of ascertaining the status of the market, he now saves a vast amount of time in the course of the year. When he is assured by information over the telephone that he can sell to advantage he loads up his wagon, and not till then.

As illustrating the advantage of keeping in telephone touch with the market, an incident in last year's transactions in broom-corn in Illinois is related by the *New York Sun*. A prospective rise in the market was preceded by great activity on the part of the brokers. Buyers from the outside began to clean up the broom-corn at \$60 a ton, when a telephone manager called up the farmers on his system and told them the market was rapidly rising. The result was that before the season ended they got \$240 a ton for their crop. One farmer reports that in addition to getting nearly double the usual work out of his teams, through their being saved futile trips to market, he has been enabled to do away with the hire of two men, as he could spend more time on his farm and save the diminished output of the hands at work in his absence. Another farmer saved all his buildings by being able to summon help quickly from a nearby town, and also from his neighbors when a fire broke out. Still another, by getting a physician promptly, saved the life of his only son, when the delay of half an hour would have been fatal.

An innovation in the use of the telephone which promises to be the vogue is already very popular. The local grocer or butcher, realizing that time is money, pays for the monthly rent of the telephone of any of his customers who spend \$25 at his store during the month, or makes a corresponding discount for a smaller expenditure. He finds that in the increased amount of business coming through the greater ease of transmitting orders, and the reduction in his staff of order men, he can well afford to throw in the telephone service, which furthermore becomes a splendid advertisement for his store.

In the early days of the rural telephone the farmers were content to utilize their fence wires for intercommunication, and in many districts, particularly in the Western States, this method so reduced the cost of installation as to enable many communities to have a tolerably effective service, which otherwise would have had to go without any. But the farmers are becoming more fastidious. They now want good service, and they are getting it.

The systems employed range from a single line, with from three or four to a dozen instruments connected, to comprehensive systems covering entire counties and having hundreds of patrons. For instance, in Geauga County, O., near Cleveland, where there is a population of about 14,000, there are over 1,000 patrons, the number in each township ranging from fifty to nearly four hundred. Great attention is paid to toll service, and the best construction and apparatus are insisted on, as being in the long run the most economical.

An example of the village and rural exchange is New Augusta, Ind., with seventy-five subscribers, fifty of whom are farmers, the most distant being about seven miles. When a single neighborhood line with a few instruments attached is desired, a switchboard is not necessary. The subscribers signal each other direct by giving different combinations of rings.

So easy has the organization of rural telephone systems become that it is safe to predict that within a very few years the majority of the 4,000,000 farmers said to be yet unprovided with telephone service will have followed the example of their more enterprising brethren and brought themselves within touch of civilization. If any community wishes to install a system, no matter how limited, it has only to communicate with a reputable installation firm to receive the fullest and the clearest instructions as to how to go about it.

A favorite method of organizing is for the farmers to form partnerships

or cooperative (mutual) companies for the furnishing of service only to the locality in which the subscribers live. Sometimes the service is furnished by nearby telephone exchanges running lines into the rural districts.

To Save Automobilists from Dust Discomfort.

RIDERS in autocars everywhere will be interested in an American invention to do away with the annoyance and discomfort which all have experienced while traveling on dusty roads by the dust which is stirred up by the car and surges over the top of the rear end of the vehicle. The car in its forward movement, especially if it is moving rapidly, creates air currents beneath it which stir up the dust, and it also creates behind it a partial vacuum, says the *Philadelphia Record*. The dust-laden air from beneath the car rushes up behind to fill this partial vacuum, and, as a result, deposits or almost throws the dust over the rear top edge into the car and upon the occupants. To prevent this a shield has been extended out behind the car, but such shield is only a makeshift and is more or less unsightly on a touring car of the tonneau type. A Cleveland (U. S. A.) inventor, after studying the problem, discovered that by controlling the air currents thus formed they could be deflected in such a manner as to break up and interfere with the objectionable dust-laden currents. To accomplish this, he uses a shield, preferably a thin sheet of metal, painted to correspond with the tonneau finish, which extends from the side of the car well to the rear, terminating just at the edge of the rear door. The air currents which flow into the front ends of these conduits are deflected and discharged across the rear end of the car in a zone with the upper edge. The inventor explains that as this air, taken from a considerable distance above the ground and thus free from dust, is discharged from the rear of these channels, or air conduits, it creates a partial vacuum behind the car, and this zone interferes with the usual sudden uprush of dust-laden air, which thus checked is prevented from flowing over the rear edge of the car.

New Apparatus to Prevent Shipwrecks.

THE cause of three-fourths of the shipwrecks and loss of life at sea seems about to be removed, according to a writer in a recent issue of *Collier's Weekly*. It is not a wire or even the air, but the water this time that is used to transmit sound vibrations. For some weeks there has been installed on the steamers of the Metropolitan Company of Boston an apparatus which may yet make it possible for the vessels beating about the coast in a storm to know where the rocks and shoals are when the fog will not permit the light to be seen and the noise of the wind drowns the sound of the bell-buoy or the siren; for a battleship to know of the approach of a submarine and a fishing-smack of the approach of a liner off the Banks of Newfoundland.

The apparatus is extremely simple. It amounts to nothing more or less than ringing a bell under water, which the pilot or captain can hear telephonically. Screwed on both sides of the vessel's hull are two receivers, which are connected by wires with the wheel-house. These receive the vibrations from the bell hanging in the water on the side of the lightship. The navigator has only to put the ear-piece to his ear and ascertain on which side the vibrations are the louder in order to know the direction of the lighthouse and his own position in the fog with comparative accuracy.

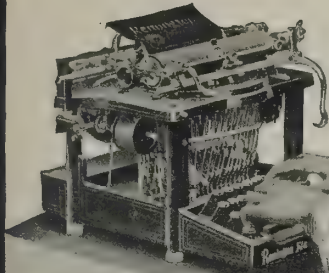
For fishing vessels a ball receiver has been provided, and this is used also to get more delicate intonations aboard a steel vessel. The value of the apparatus was put to a good test recently when the steamer James S. Whitney was approaching the Boston lightship on her return from New York. The lighthouse was obscured by rain and fog. Thanks to the signal apparatus, the captain immediately heard the bell and got his direction. It was not until five minutes after that he heard the lightship's whistle for the first time.

The American Farmers' Balance of Trade.

DISCUSSING the balance of trade, the United States Secretary of Agriculture shows in his latest report that the favorable balance to the credit of this country is due to the farmers. The balance of trade in favor of farm products during the past fourteen years, no year excepted, aggregated \$4,806,000,000. In products, other than those of the farm, during the same period the balance of trade was adverse to this country to the extent of \$865,000,000. Our farmers not only canceled this immense obligation, but placed \$3,940,000,000 to the credit of the nation when the books of international exchange were balanced. He concludes that "it is the farmers who have paid the foreign bondholders."

American Fruit in Germany.—Last month we printed some information about the increased demand for American fruit in Europe. United States Consul-General Guenther, at Frankfort, furnishes the following additional information showing how Germany likes our fruit: "The year 1903 has witnessed a great increase in the imports of American apples into Germany. For the first eight months of 1903 the imports were 3,696 metric tons of 2,204 pounds each, against 214 tons and 543 tons during the same months in 1902 and 1901. Of American dried fruit, baked and simply preserved, the German imports for the same period were 25,251 tons, against 11,981 and 12,060 tons, respectively, in 1902 and 1901."

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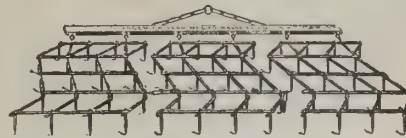
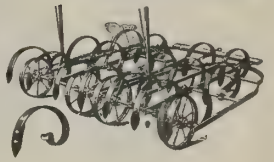
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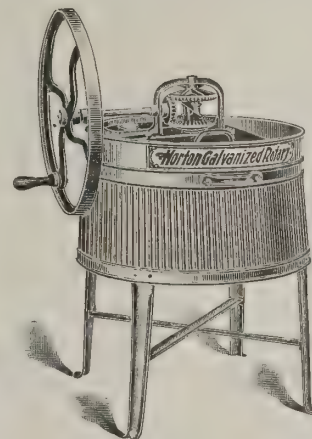
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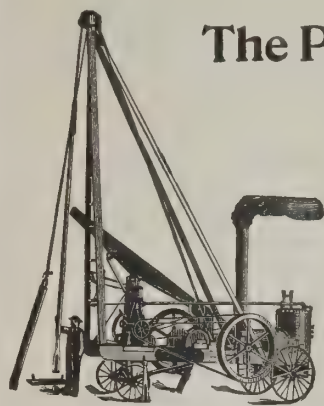
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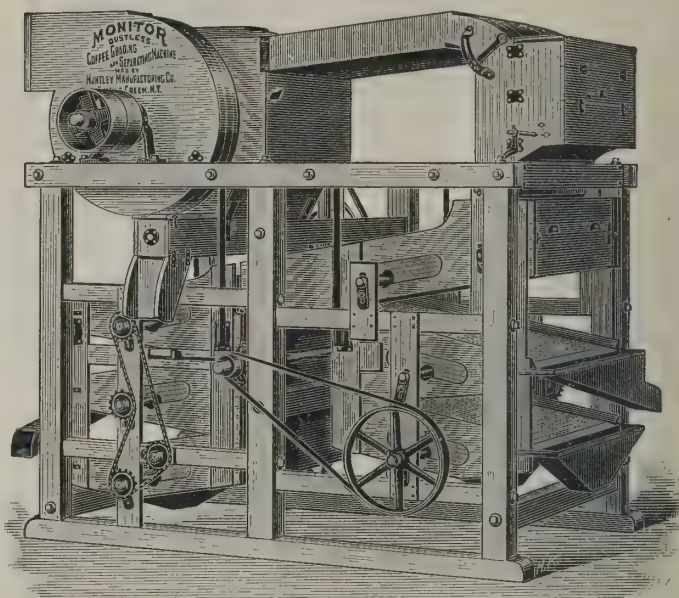
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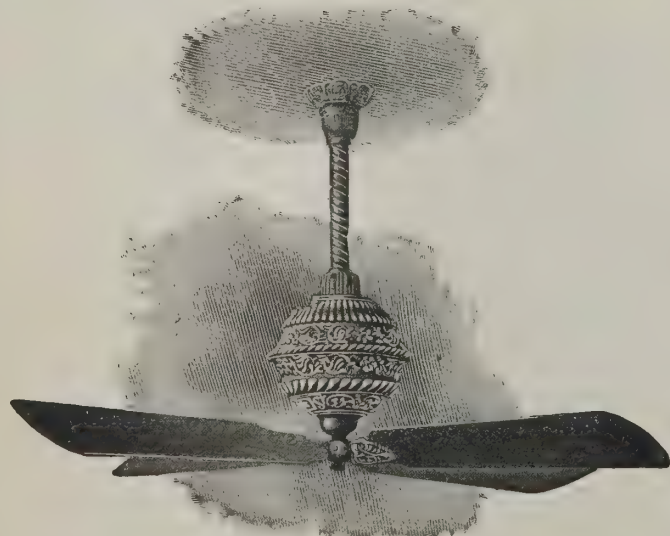
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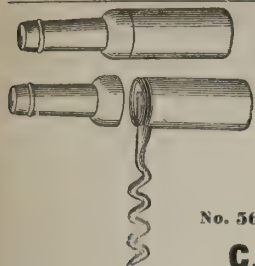
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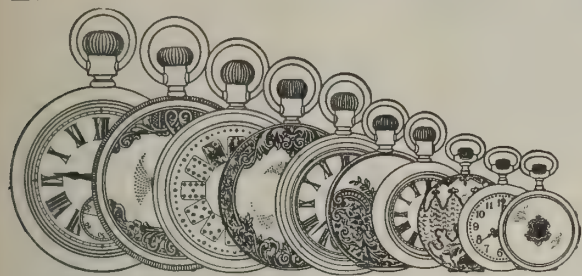
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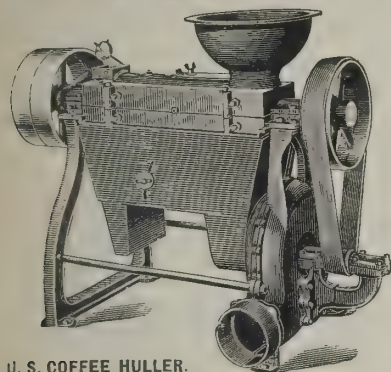
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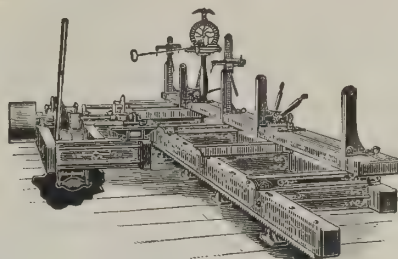
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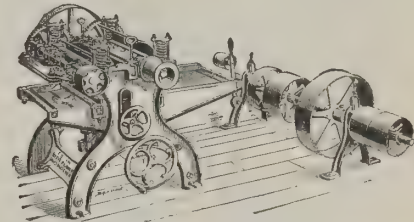
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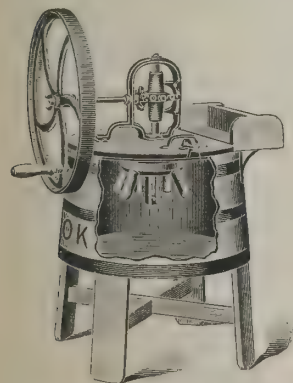
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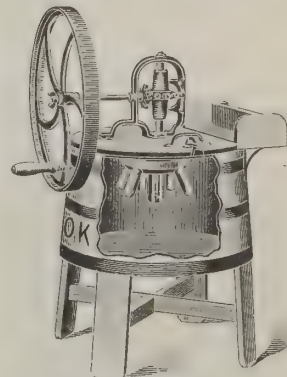
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O. K. WASHER.



O. K. WASHER.

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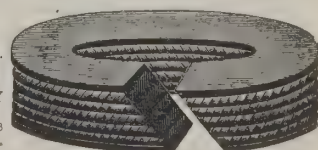
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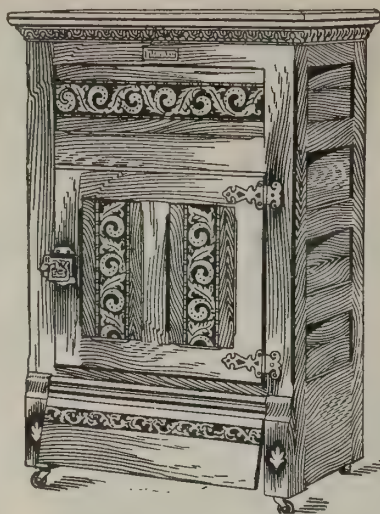
HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint**, manufactured by Harry Louderbough, proprietor of **NEW JERSEY PAINT WORKS**, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—its splendid condition.



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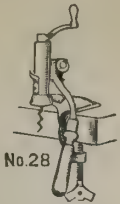


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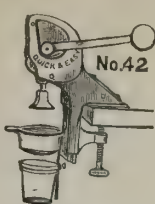
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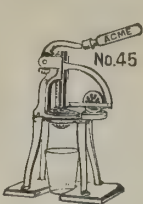
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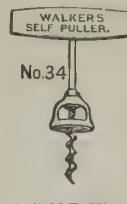
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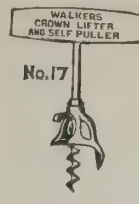
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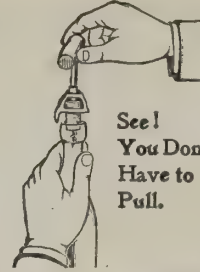
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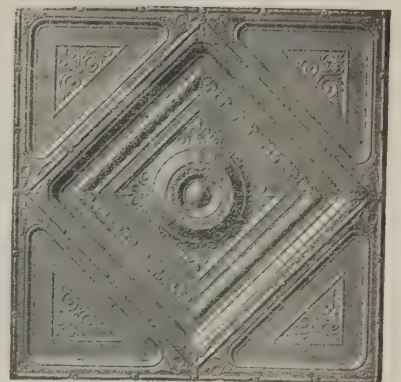
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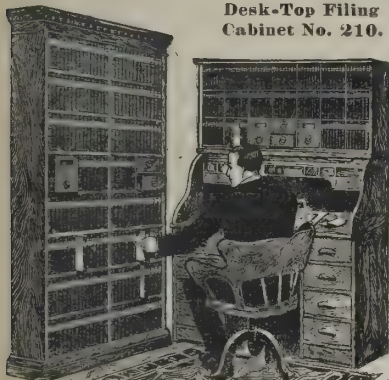


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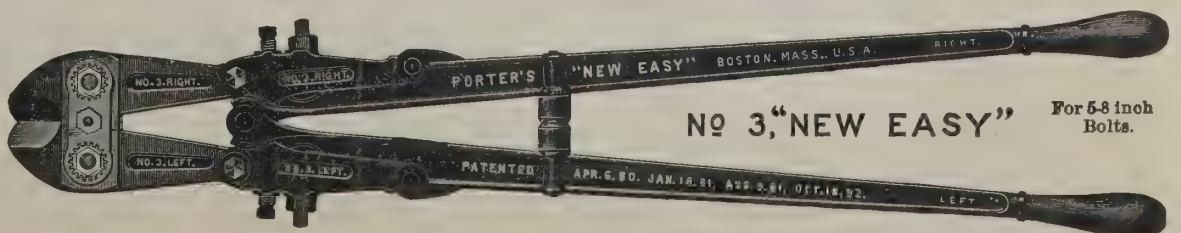
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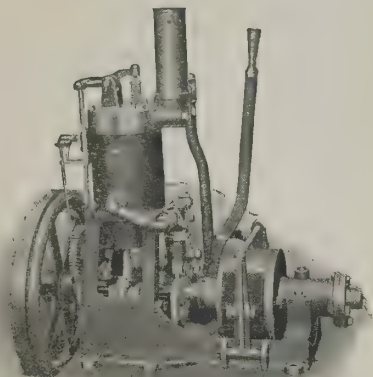
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sight. Over 500,000 sold in 17 months in the United States. The ac-
companying cuts illustrate only a few pedestal tricks.

See Special Export Proposition.



\$18.00. Upon receipt of Eighteen Dollars in U. S. gold, or its equivalent, we will
box ready for steamer, f. o. b. cars New York, **one (1) gross of the
Tops, with Trick Outfits complete.** Size of case, 24x12x11 in.; gross weight, 54 lbs.

Prompt Deliveries and Entire Satisfaction Guaranteed. ORDER NOW!

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"St. Louis A. B. C. Bohemian."

"KING OF ALL
BOTTLED BEERS"

(Trademark.)

AMERICA'S
FAMOUS
BOTTLED BEER.

Brewed and bottled expressly
for the

EXPORT TRADE,

and sold in all civilized lands.
Beyond all comparison the finest
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invited to write direct to

THE
AMERICAN
BREWING
Co., St. Louis, Mo.,

United States of America.



"Famous the World over"

"KING OF ALL
BOTTLED BEERS"



"Famous the World over"

Orders filled through export agents and also through FRANK S. DE RONDE CO., New York.
Always mail us duplicates when ordering through commission houses.

TARR & WONSON'S COPPER PAINT

For Wooden Vessels' Bottoms, prevents
boring of worms and all marine growth.

Awarded Eight Highest
Medals:
Gold, Silver and
Bronze.



Excels on Every
Point.
Cheapest to Use in
the End.

TESTIMONIAL. NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper
paint.

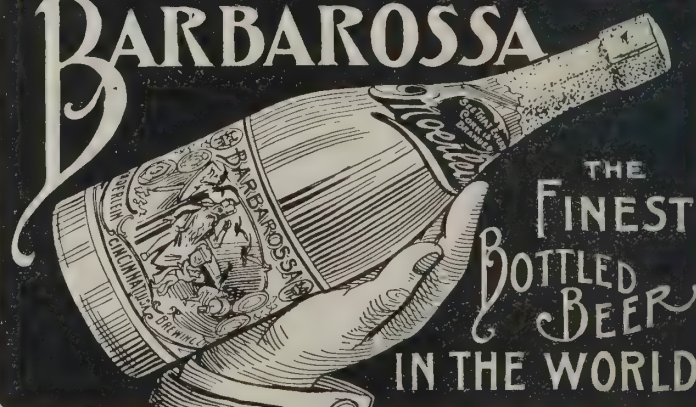
I used your paint on my vessel here December 10, 1902; bottom in poor condition
for good coat-damp; remained at the dock here forty-nine days; thence to New Lon-
don, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet
water—water very warm—for eighty-seven days; thence back to New York, when I
hauled on dock for painting again, July 5, 1903. I found the surface clean and clear
of sea growth of every nature, hence my relative feelings toward your product is,
beyond doubt, to the head of the list to stand the severe test as it did of the shoal,
warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,
(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

THE WORLD'S STANDARD FOR FORTY-ONE YEARS.

RACING COMPOUND for Wooden Yachts' Bottoms,
Bright and Smooth.

Manufactured Only by TARR & WONSON, Limited,
GLOUCESTER, MASS., U. S. A.

BARBAROSSA



Moerlein's Beers
STANDARD
OF PURITY AND WHOLESOMENESS.
THE CHRISTIAN MOERLEIN BREWING CO.
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POCKET FLASH LIGHT. \$1.50

ELECTRIC CARRIAGE LIGHT. \$5.00

ELECTRIC TABLE LAMP. \$3 COMPLETE

Headquarters for ELECTRIC NOVELTIES.

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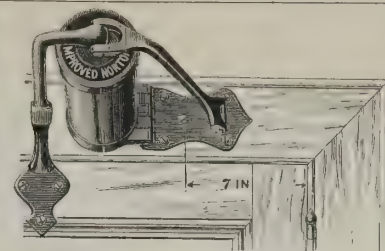
Battery Hanging Lamps.....\$10 00	Genuine Electric Insoles.....\$0 25
Telephone, complete.....5 95	Telegraph Outfits.....2 75
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Electric Carriage Lights.....5 00	Battery Table Lamps.....3 00
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Electric Hand Lanterns.....2 00	Bicycle Electric Lights.....2 25
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PRINTED MATTER IN ALL LANGUAGES.

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Agents wanted. Send for New Catalogue. Cable Address: "Fletcher, Cleveland."



NORTON DOOR CHECK CO.

MANUFACTURERS AND EXPORTERS
OF THE

IMPROVED

Norton Door Check and Spring.

Our regular checks are made in six sizes, to fit any size door; are either right or left hand and may be applied to either side of a door without change.

Controlled by air and a strong spring. The oldest and most reliable check made. Orders filled through commission houses. Correspondence solicited. Catalogues on application.

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No. 2.....	5.00
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Subject to Discount.

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This Is the Famous Foster Rubber Heel



The Heel That Won't Slip.

The heel with no holes to collect mud and dirt.
The heel that outwears all others.
The Foster Heel is the kind to buy.
The friction plug is the reason why.
Foster Heels at your shoe man's cost no more than other kinds.

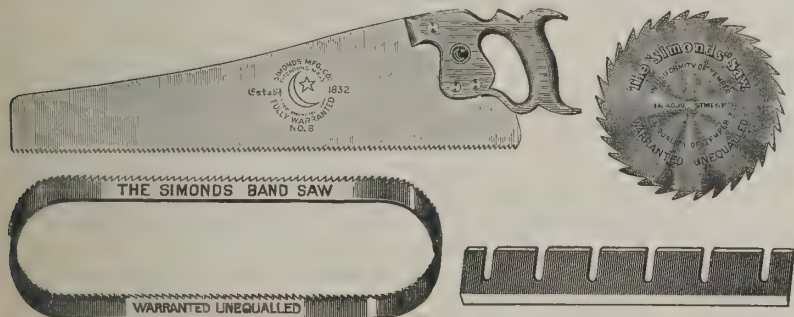
FOR SALE EVERYWHERE.

Dealers Supplied by **Elastic Tip Co., Boston.**



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were awarded the **Grand Prix and Gold Medal** at the **Universal International Exposition of Paris, 1900.** All competition eclipsed.



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Poultry Supplies.



Prairie State Incubators and Brooders, Russ, Prize, Champion and Old Homestead Brooders, Wire Fencing, Feeds, Drinking Fountains, Bone Cutters, Caponizing Instruments, Lice and Vermin Killers, Condition Powders, Trap Nests, Cold Water Paint, Dog Medicines and Foods, Live Dogs, Cats, Chickens, Ducks, Geese, Pheasants, Pigeons, Guinea Pigs, Rabbits and Belgian Hares, Goats and All Kinds of Pet Stock.

A complete list will be found in our immense 162-page Illustrated Catalogue, which will be sent free to any address. Send for one.

Excelsior Wire and Poultry Supply Co.

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106-108 READE STREET, NEW YORK.

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POLISHOLA,

The ideal paste for all kinds of black leather shoes.

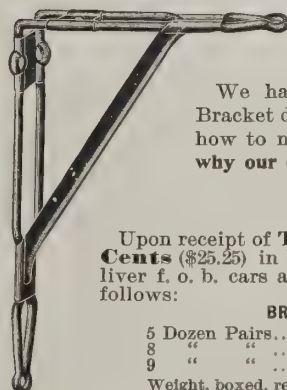


Patent Leather and Russet Pastes, Empress, Queen and Princess Dressings, Ebony Waterproof Polish.

Also other Polishes and Dressings of every description.

Correspondence solicited in French, German and other languages.

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"THE MOST POPULAR BRACKET MADE."

We have made nothing but this Steel Wire Shelf Bracket during the past eleven years. We have learned how to make it, and are willing to sell it low. That is why our output is close on to 11,000 Brackets each day.

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Upon receipt of **Twenty-five Dollars and Twenty-five Cents (\$25.25)** in U. S. gold, or its equivalent, we will box and liver f. o. b. cars at New York City **Our Special Offer** as follows:

BRADLEY BRACKET ASSORTMENT No. 1.

5 Dozen Pairs.....	4x5	5 Dozen Pairs.....	7x9
8 " " ".....	5x7	5 " " ".....	8x10
9 " " ".....	6x8	1 1/2 " " ".....	10x12

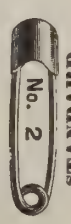
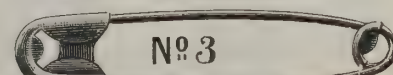
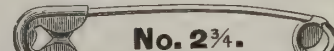
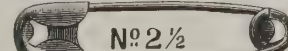
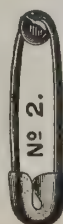
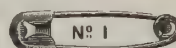
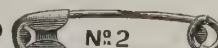
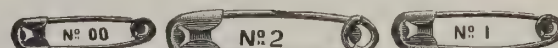
Weight, boxed, ready for steamer, 200 lbs. Size of case, 42x23x18 inches.

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HAVE THE MOST EFFECTIVE GUARD TO PREVENT CATCHING OR TEARING OF MATERIAL
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OUR HOPS ARE CAREFULLY SELECTED AND PUT UP FOR SHIPMENT TO ALL PARTS OF THE WORLD.

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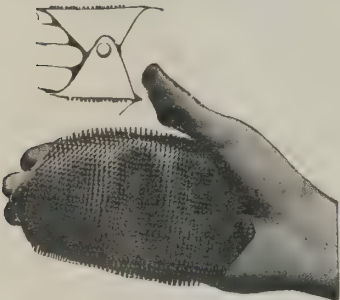
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Orders promptly executed through the leading commission houses. Correspondence solicited.

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Are Indispensable for Complexion Beautifiers.

If applied properly will remove

BLOTCHES,
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Send for Catalogues as follows:

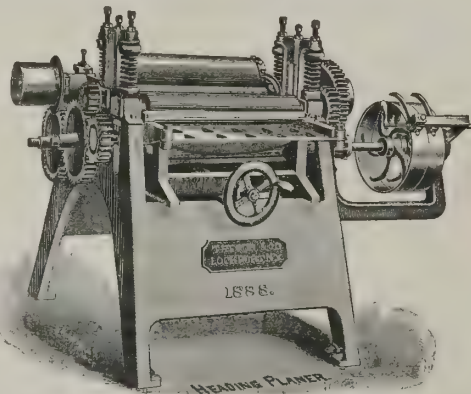
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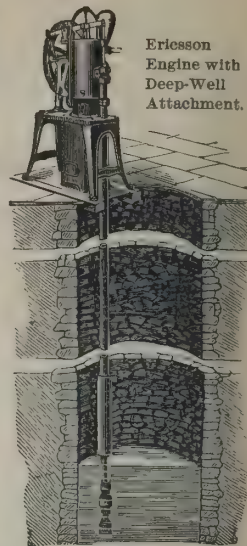
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Ericsson Engine with Deep-Well Attachment.

The OLDS Gas and Gasoline Engines.

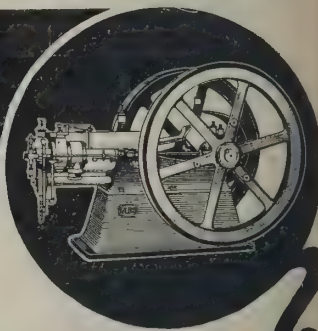
The Olds patents, protecting the essential parts of our engines, enable us to dispense with two-thirds of the usual complications, giving the highest efficiency, the greatest durability and the most pronounced economy.

Stationary Engines, - 3 to 50 H. P.

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Write for full information and illustrated catalog.

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International

(Galvanized Steel)

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Will wash fabrics, coarse or fine, as quickly and cleanly as any washing machine made, and being made of Galvanized Steel will outlive and outwear ANY THREE Wooden Washing Machines.

The galvanizing is performed after the machine is put together, thus preventing cracks, which would cause rust.

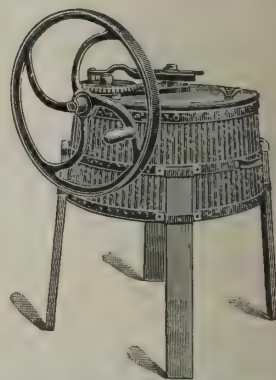
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Each machine occupies six cubic feet. Weighs seventy-two pounds.

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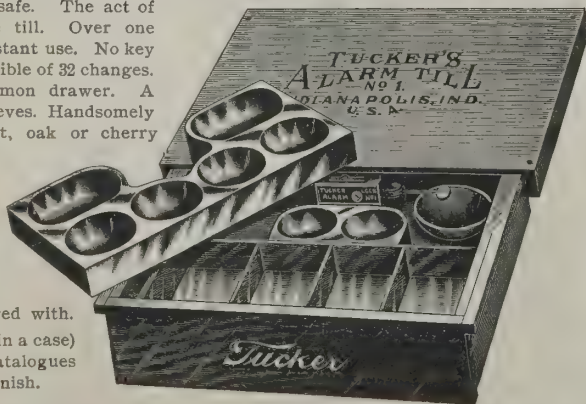


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A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

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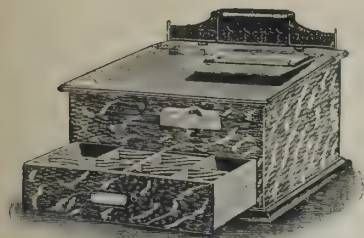
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For Baling Cotton, Wool, Rags, Hemp, Etc.

Simple, compact and very powerful; worked by either hand or steam power; not liable to get out of order and very durable; they are the best baling presses made.

Prices from \$175 to \$350, according to size.

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COTTON SEED OIL MILLS. We make various sizes, of capacity from 5 to 150 tons of seed per day. Our mills embrace all the modern improvements, and will give the best results. We will erect and complete, guaranteeing capacity.

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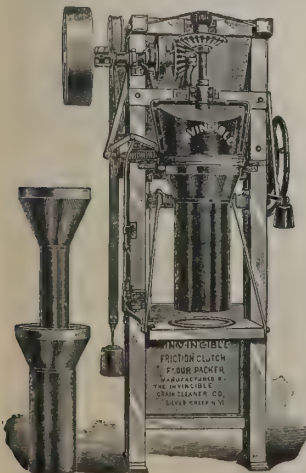
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This machine meets the requirements of millers and packers who desire a good friction clutch flour packer which has been fully tested and found to work satisfactorily under all conditions. Made with the best materials, and is strong and durable so that it can be relied upon to resist every strain to which it may be subjected.

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Cable Address, "Artesianos, New York."

Manufacturers of everything required to drill and complete Wells for

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Any depth from 25 to 5,000 feet.

Also Special Tools for Soundings and Test Borings for Water and Mineral Prospecting and Developing Mines; Light, Portable Outfits operated by Man Power. We furnish

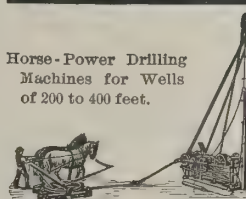
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Complete Machines and Experienced Men sent to any Country or Climate. We have the largest and most varied experience of any firm in this business in America.

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Horse-Power Drilling Machines for Wells of 200 to 400 feet.



Machine for 2,000 to 4,000 ft.



Steam Rigs for 200, 350, 600 and 1,000 ft.



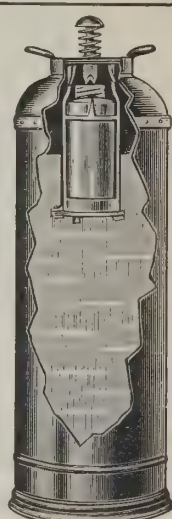
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The Best, Cheapest and Simplest made. Write us for Catalogue and Prices.

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The Largest Manufacturers of Chemical Fire Extinguishers in the World.

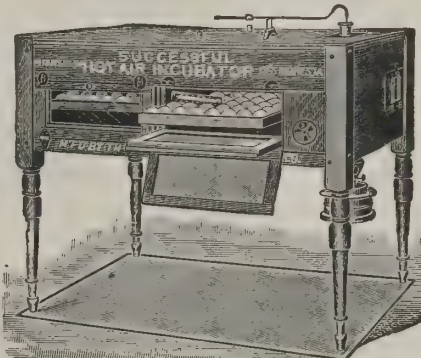
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THE BEST THAT SCIENCE AND MONEY CAN PRODUCE.

The "SUCCESSFUL"



is regarded by those who have made money out of poultry raising as the greatest egg-hatching machine of the day. Heat, moisture and ventilation controlled automatically. Hatches well in the hottest and driest climates of the world. The walls of our machines are built on the refrigerator plan and packed with mineral wool asbestos. Sizes from 54 to 400 eggs. Prices from \$10 to \$37. Both hot-air and hot-water heating systems used. All hot water tanks made of 14-oz. planished copper.

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"Black Hawk"

Corn Sheller and Separator.

14th Year of Success.

BEST Hand Sheller ever made. Original, Honest, Durable. Shells rapidly; takes every grain off the cob. Easy to use and always ready.

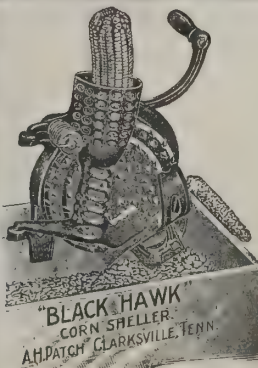
WILL LAST A LIFETIME.

Weight, 15 lbs. Capacity, 8 to 14 bushels per hour. Largely of Malleable Iron. All bearings chilled. Attached to any box instantly by Clamps.

SPECIAL EXPORT PACKAGES. Order direct or through any reliable Export Commission House.

Beware of Imitations. Insist on having Patch's Patent "Black Hawk" Corn Sheller. All others are Frauds.

A. H. PATCH, Patentee and Sole Maker, **Clarksville, Tenn., U. S. A.**



The Soap That Cleans.



68 ESSEX STREET.

Orders filled through commission houses. Correspondence solicited. Circular "B" on application.

STAINILGO MFG. CO., Boston, Mass., U. S. A.

The Best-Selling Shoe Polish IN AMERICA.



Write for samples and prices.

BLACKOLA

is the ONLY POLISH that both

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ALL BLACK SHOES.

Different from every other Shoe Polish.

Manufactured solely by

The World Polish Mfg. Co.

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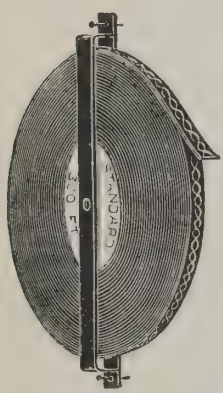
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Silver-Plated Hollow Ware,

444 to 448 Fore Street,

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Salesroom: 364 Washington Street, Boston, Mass., U. S. A.



BOX STRAPPING OF ALL KINDS.

STEEL AND WIRE BOX STRAPS.

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Security Seals for Wine Cases.



Box Corner Fasteners, All Sizes.



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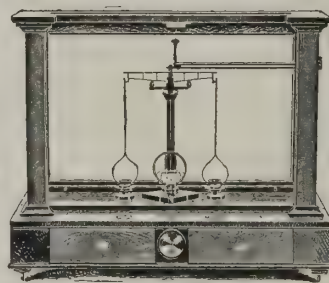
STANDARD METAL STRAP CO.,

336-342 East 38th Street,

Cable Address, "Metalstrap."

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BALANCES AND WEIGHTS OF PRECISION.



No. 045 Button Balance. 6-inch beam. Sensibility, 1-50 Milligram.

We are the largest manufacturers of Assay and Analytical Balances and Weights in the world.

Our Balances are the recognized standard for accuracy and excellence of workmanship.

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Established in 1873.

Woolsey's Copper "BEST" Paint HAS NO EQUAL,

As its increased consumption each year clearly demonstrates. The same can be said of our full line of Marine Specialties, of which we are the largest manufacturers in the world. We guarantee our Copper Paints to be superior to any other make.

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Yacht Black,
Yacht White,
Rubber Seam Paint,

TRADE MARK.

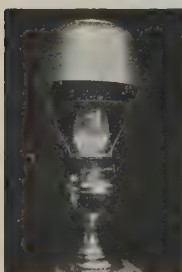


TRADE MARK.

Marine Black,
Marine White,
Marine Green,
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Anti-Corrosive 1st Coat **Iron Bottom Paint**, Anti-Fouling 2d Coat. Also Manufacturers of Varnishes, Japans and a full line of house paints.

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LAMP AND HEATER COMPLETE.

\$27.00 per dozen. Nickel-Plated, Highly Polished **60-Candle-power Lamp**. This Lamp is furnished with patent lift attachment on chimney gallery and smokeless and odorless flame spreader, with fountain indicator of amount of oil in Lamp at all times.

A 20th CENTURY WONDER.

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The HELIOS SCIENTIFIC HEATER.

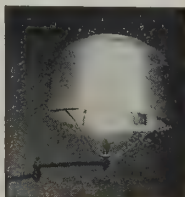
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In which to Read, Rest, Sleep, Write, Study, Sew or Smoke.

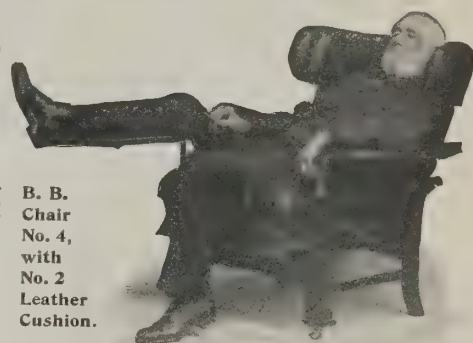
Adaptable to Your Different Inclinations of Mind or Body.

The Chair here shown is that known as our B. B. No. 4. It is made in weathered oak finish and is leather covered.

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GOOD COFFEE WITHOUT EGGS OR SACK.

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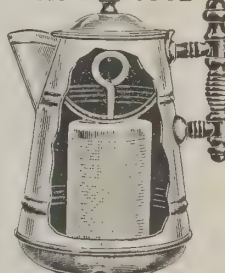
Will not taint or tarnish. Will fit any Coffee Pot. The quickest seller of any Household Article upon the market, and should be in every house throughout the civilized globe.



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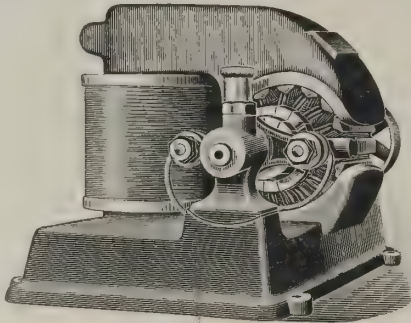
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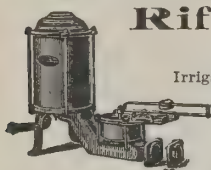
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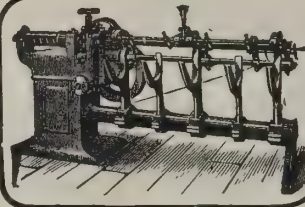


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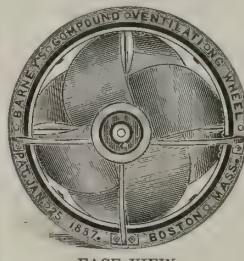
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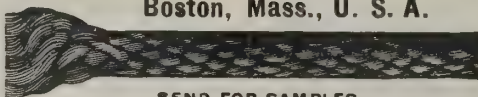
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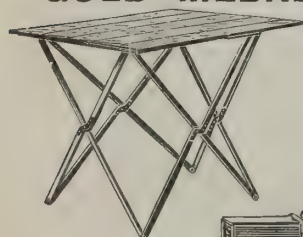
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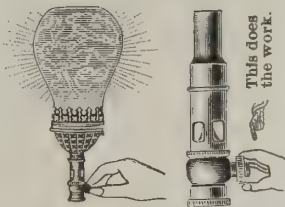


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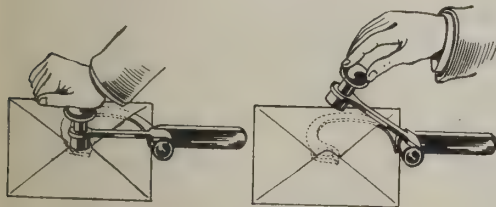
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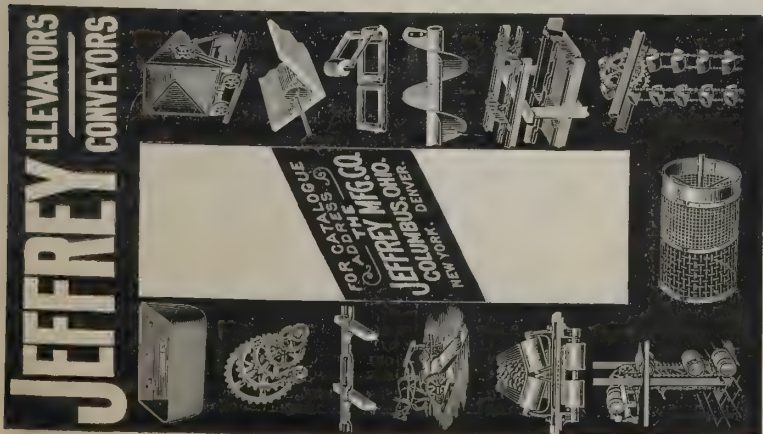
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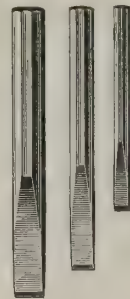
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5	"	1/16	"

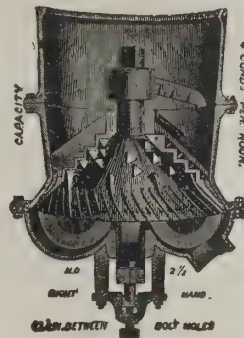
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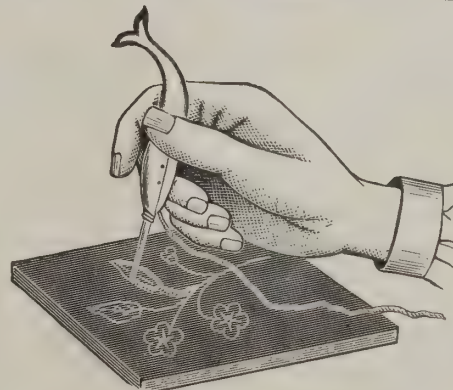
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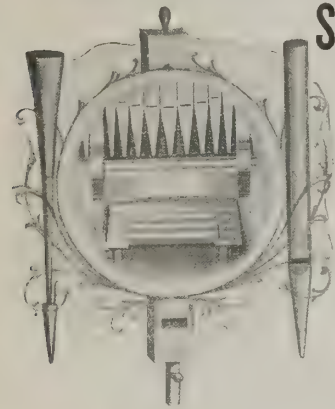
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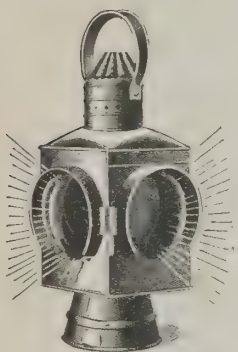


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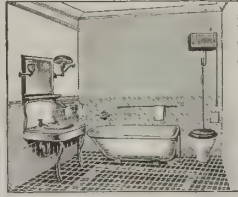
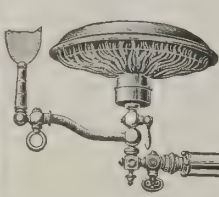
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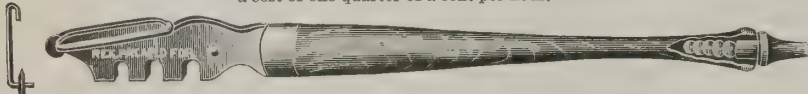
"FERNO" Heating Disc & Cooking Stove



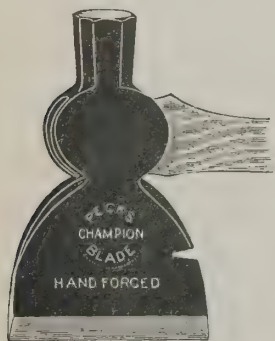
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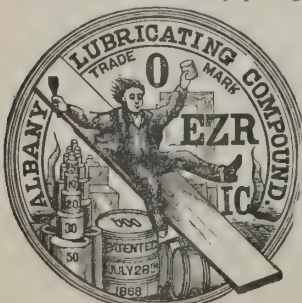
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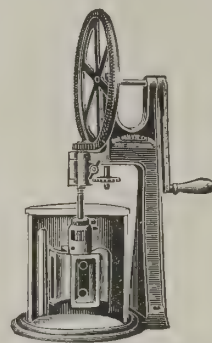
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Rochester Surgical Appliance Co., 17 ELM STREET,
ROCHESTER, N. Y.

ONE-MINUTE CHURN.

From Milk to Butter in ONE Minute.
NO CREAM SEPARATOR NECESSARY.
The use of the "One-Minute Churn" assures to private families fresh,
pure and wholesome butter at all seasons of the year, doing away
with tainted and poorly manufactured butter.EXPORT ONLY.—Upon receipt of Thirty Dollars (\$30.00) in
U. S. Gold, or its equivalent, we will box, ready for shipment abroad,
one of each, seven in all, of our "One-Minute Churns" as follows:

Size A,	Industrial Miniature, capacity	1 quart
Size No. 1	(Special Household Size)	1 gallon
Size No. 2	"	3 "
Size No. 3	"	5 "
Size No. 4	"	7 "
Size No. 5	"	9 "
Size No. 6	"	13 "

NOTE.—Size A is an Industrial Toy for Children.
Orders received direct or through export commission houses.
Specify "One-Minute Churns."

THE ONE-MINUTE CHURN CO.

I. M. MURPHY, President.

No. 9 Old Slip, New York, U. S. A.

Palmer Gasoline Engines and Launches.

Over 9000 in Successful Operation.

PRICES FOR EXPORT ONLY:

1½ H. P. Two-Cycle Marine Engine	\$75.00
3 " " " "	90.00
5 " " " "	150.00
7 " " " "	175.00

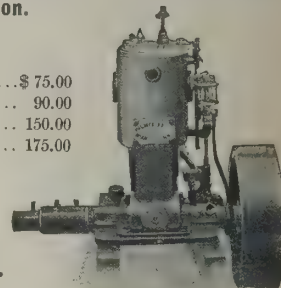
Four-Cycle Motors from 3 to 32 H. P. each.

Automobile Motors and Complete Launches.

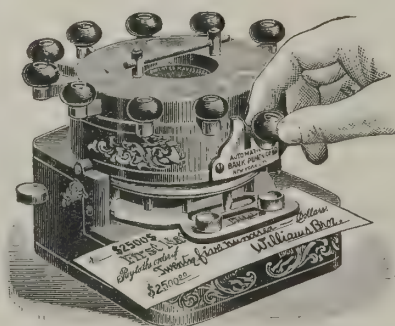
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PALMER BROS.

COS COB, CONN., U. S. A.



Protection for Bank Checks!

A device that insures bank checks and drafts from being raised or altered appeals
to all good business concerns—conservative as well as progressive.The laws of nearly all countries make it
incumbent upon those issuing checks to
surround them with every obtainable
protection.The Ingersoll Automatic Check
Punch cuts the marks and figures into
the check and on account of their peculiar
design, they cannot be successfully altered.
Guaranteed five years—lasts twenty.Used and endorsed by leading banks
and mercantile houses of the United StatesCorrespondence invited from houses
able to distribute in quantities.

Price, \$25.00

LIBERAL DISCOUNTS TO THE TRADE.

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New York, U. S. A.

★ STAR CREAM SEPARATORS. ★

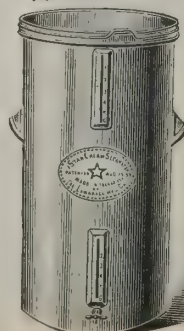
Over 250,000 in use.

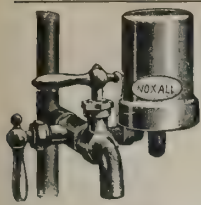
More simple in construction, requires less labor and makes from 20 to
30 per cent. more butter than any other separator on the market.To introduce abroad.—We will, upon receipt of Twenty-four
dollars and fifty cents [\$24.50] in U. S. gold, or its equivalent, box
ready for steamer and deliver f. o. b. cars at New York City, one of each
of our Star Cream Separators, seven in all, as follows:

No. 0.	Capacity [1 cow]	24 quarts.
No. 1.	Capacity [1 to 2 cows]	48 quarts.
No. 2.	Capacity [3 to 4 cows]	88 quarts.
No. 3.	Capacity [6 to 8 cows]	118 quarts.
No. 4.	Capacity [8 to 10 cows]	180 quarts.
No. 5.	Capacity [15 cows]	160 quarts.
No. 6.	Capacity [20 cows]	200 quarts.

Weight of the seven Star
Cream Separators, boxed
for shipment, 140 lbs.Orders received direct or through export houses. When ordering
through the latter, please mail us duplicate of order, to avoid errors.

LAWRENCE MFG. CO., Toledo, U. S. A.

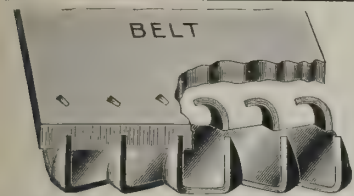




Noxall Natural Stone Water Filters.

Make all water, no matter how dirty, absolutely pure. Prevent typhoid and all zymotic diseases. Are small, compact, simple and inexpensive. All sizes and prices from \$2.50 up. For full particulars, terms, discounts, etc., write to

AMERICAN FILTER CO.
580 Montgomery Bldg., Milwaukee, U. S. A.



SOFT-STEEL BELT HOOKS

For High-Speed and Hard-Running Belts.
Orders Filled Through Commission Houses. Correspondence Solicited. Write for Catalogue T.

W. O. TALCOTT,
Exporter and Manufacturer of 180 Varieties of Bolt Fastenings,
PROVIDENCE, R. I., U. S. A.

GOLD PENS—ALL SHAPES AND STYLES.

For Jobbers and FOUNTAIN PEN Manufacturers.

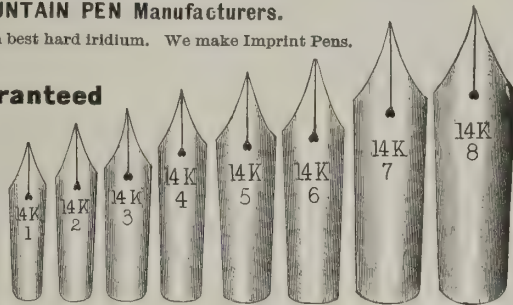
All Pens warranted 14kt. gold with best hard Iridium. We make Imprint Pens. Imprints free on quantity orders.

Smooth Points Guaranteed

Full line Long and Short Nib Gold Pens. Send your name and let me quote you export price.

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17 John St., New York,
U. S. A.

Cable Address: "GOLDPENS."
Western Union Code used.



ESTABLISHED 1832.

THE FAMOUS D. R. BARTON PLANES AND EDGE TOOLS



For Carpenters, Coopers, Wagon and Carriage Makers, Ship Builders, Wood Carvers, Butchers, Etc.

Not equalled by any other tools made in America. None better made anywhere in the world. Specified in United States Government requisitions. Send for Catalogue.

Made only by **MACK & CO., Rochester, N. Y., U. S. A.**

200-Egg Incubator for \$12.80

The simplicity of the Stahl Incubators created a demand that forced the production to such great proportions it is now possible to offer a first-class 200-egg incubator for \$12.80. This new incubator is an enlargement of the famous

WOODEN HEN

recognized the most perfect small hatcher. This new incubator is thoroughly well made; is a marvel of simplicity, and so perfect in its working that it hatches every fertile egg. Write for anything you want to know about incubators. Send for the new free illustrated catalogue.

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GEORGE D. LAMB,

Manufacturer and Exporter of

Lamb's National Strap Fastener and Leather Straps of All Description.

Orders filled through commission houses. Correspondence solicited. Circular "L" on application.

192 Fulton Street New York, U. S. A.

F. M. STARK,

111 Himrod Street, BROOKLYN, N. Y., U. S. A.



Manufacturer of **Fine Gold Pens.**

ALL SHAPES AND STYLES.

Correspondence solicited. Order direct or through commission houses.

Rings that are Guaranteed to give wearer Satisfaction

MADE OF ROLLED-GOLD SEAMLESS WIRE.

In order to introduce our lines we are prepared to send an assortment of our samples, 43 styles of our rings for \$10.00, U. S. Currency, which will give an idea of the excellent quality of our manufacture. Catalogue and price list on application. Orders executed direct or through any export commission house.

THE R. L. GRIFFITH & SON CO., Providence, R.I., U. S. A. Established 1879

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MANUFACTURERS AND EXPORTERS OF

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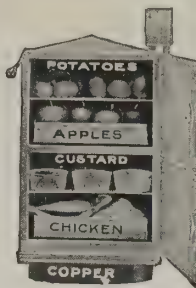
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O-HI-O COOKER & OIL STOVE CO.,

656-660 JEFFERSON AVENUE, TOLEDO, OHIO, U. S. A.



Good, Economical Cooking

We can save you the services of a cook or make a good cook out of a poor one. Saves you 50 per cent. in fuel, labor and time. Insures you deliciously cooked, easily digested, never spoiled, steaming hot meals, all cooked over one burner.

GRAND FOR CANNING FRUIT.

Orders Promptly Filled Direct or Through N. Y. Commission Houses.

In latter case, send us duplicate order to avoid errors.

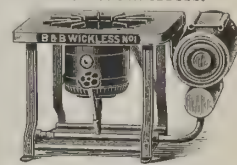
\$3.50 up.

Agencies Wanted in all Trade Centers of the world.

We manufacture a full line of

OIL STOVES

that make a good seller in connection with cookers. Write for Catalogue and Discount.



\$4.30 up.

CITY FORGE & IRON WORKS, Dayton, Ohio, U. S. A.

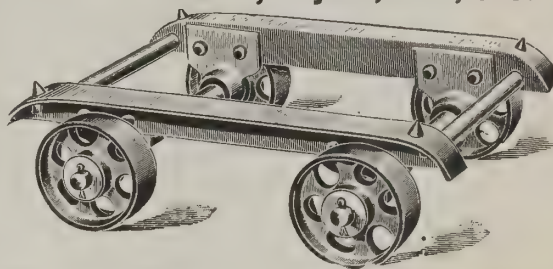
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Gem Box Truck

It's made with and without Rubber Tires.

It's made with and without Roller Bearings

Will carry a load of 2000 pounds. Weight only 40 pounds. Orders filled through commission houses. Correspondence solicited. Catalogue "P" on application.

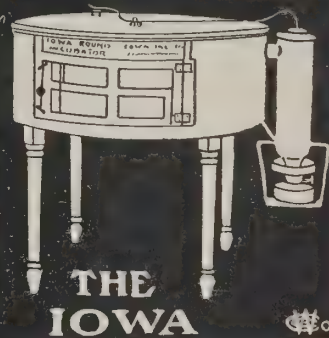


355 Eggs 354 Chicks

That's the result Mr. Geo. McDowell, Chemung Center, N. Y., obtained with an

IOWA ROUND INCUBATOR

The incubator that rounds out the largest number of chicks per hatch every time. If you are sure of your eggs you can rest assured of the same number of chicks—strong and healthy—with the Iowa Incubator. Catalogue and prices free on request. Iowa Incubator Co., Box 140, Des Moines, Iowa



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A. W. BRIM

Manufacturer and Exporter of

Lead Composition and Brass

Pattern Letters and Figures

FOR FOUNDRY MEN AND PATTERN MAKERS.

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Address all communications to the

DELAWARE OIL, GAS and DEVELOPMENT CO.,

Calvert Building, Baltimore, Md., U. S. A.

THE CADY MFG. CO., Auburn, N. Y., U. S. A.

Manufacturers and Exporters of

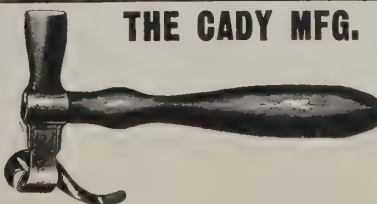
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Is as good and handy a tack hammer as can be made, and the best and handiest tack puller ever offered, all in one simple tool.

ALSO OTHER SPECIALTIES IN HOUSE FURNISHINGS.

Orders filled through commission houses.

Correspondence solicited.



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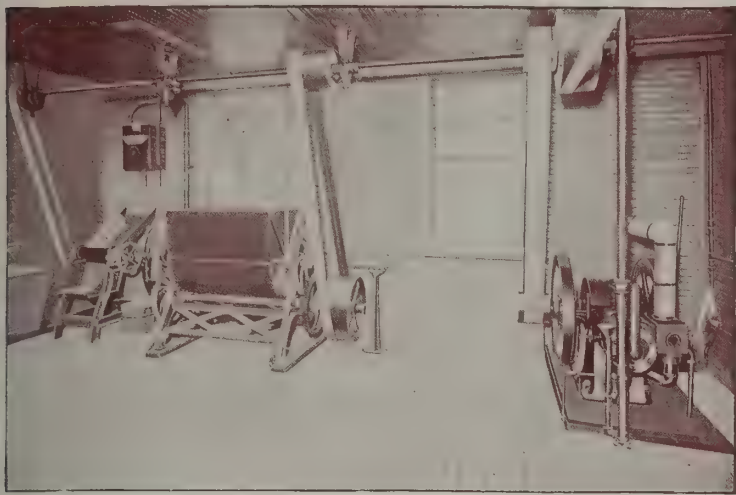
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THE JOHN C. COCHRAN CO.

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We illustrate herewith a Convenient Arrangement for the Baker's Workshop.

The machine at the left is our **No. 2 Dough Brake**, the next our **1½-barrel Dough Mixer**, and on the extreme right our **7½-H. P. Gas Engine**. The cost of this outfit, including pulleys, shafting and freight f. o. b. New York, boxed, is **\$686.00 (£140)**.

The floor space is 18x6 feet.

Net weight of engine, 2568 pounds; gross weight, 3070 pounds; box dimensions, 46x66x45 inches.

Net weight of dough brake, 667 pounds; gross weight, 967 pounds; box dimensions, 31x48x50 inches.

Net weight of mixer, 1368 pounds; gross weight, 1675 pounds; box dimensions, 76x36x52 inches.

WRITE TO US FOR FULL PARTICULARS AND PRICES ON LARGER SIZES.

THE J. W. RUGER MFG. CO.,
BUFFALO, N. Y., U. S. A.

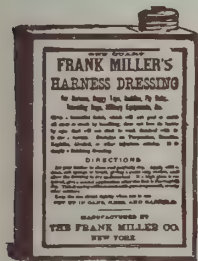
FRANK MILLER'S HARNESS OIL.

Preserves and softens the leather, thus adding life.
The highest quality of oil on the market.



FRANK MILLER'S Harness Dressing.

Recognized as
"THE STANDARD."
Produces a brilliant jet-black gloss, which will not peel or smut, and to which dirt will not stick.



ESTABLISHED 1838.

The Frank Miller Co.

349 & 351 West 26th Street, New York,
U. S. A.

MANUFACTURERS OF

Blackings and Leather Dressings.

The goods mentioned are but a few of our many preparations for leather. Write to any New York Export Commission House for our Complete Price List and Samples.

Our Preparations Are Uniform in Quality and Always Give Perfect Satisfaction.



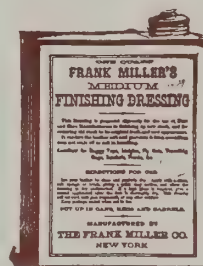
FRANK MILLER'S CROWN SHOE DRESSING.

For Ladies' and Children's Black Shoes. Produces a perfect finish, without injury to the finest leather. Each bottle in handsome carton.

FRANK MILLER'S MEDIUM Finishing Dressing.

For use of Boot and Shoe Manufacturers in finishing new stock, also for restoring old stock to its original fresh and new appearance.

Softens and Preserves.
Prevents Mould.
Does Not Scale Off.



The No 7 Hardie Painting Machine

Does the work of twenty men with brushes,
and does it better.

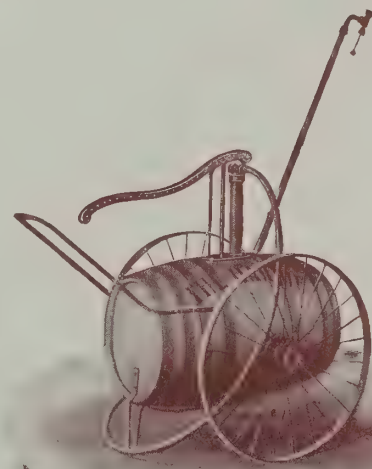
The **No. 7 Hardie Painting Machine** comprises a patented brass pump with brass ball valves, ingenious agitator and paint mixer, contained in a 30-gallon barrel, mounted on wrought-iron wheels, 26 inches in diameter, with 1½-inch tires, and is as easy to wheel as a baby carriage. It is equipped with 10 feet of high-grade ½-inch hose, long extension rod and special disgorging painting nozzle.

It will save its cost in a few hours' use.
Will spread any liquid of a sprayable nature.

SPECIAL OFFER FOR EXPORT ONLY:

Upon receipt of \$17.50, U. S. gold or its equivalent, we will box and deliver at New York City one **No. 7 Hardie Painting Machine complete**. Weight, 110 lbs. Packed in two cases—one, 9 cubic feet; one, 7 cubic feet.

We refer to 30,000 satisfied users of our machines.



The "Stay=There" Ready=Mixed Cold Water Paint

is composed of minerals ground in a liquid chemical, to be thinned with water. Packed in tight, iron-hooped barrels. **IT IS AS DURABLE AS OIL PAINT; will not chalk or peel off; is fireproof, waterproof, washable and sanitary.**

Upon receipt of **SIX DOLLARS** we will deliver f. o. b. cars at New York City **ONE HUNDRED GALLONS** of WHITE "STAY-THERE" PASTE PAINT. Gross weight, 400 lbs.; barrel, 28x28x20½ inches.

Our 1904 Catalogue, illustrating and describing the largest line of Painting Machines for every purpose, and the "Stay-There" Paint, will be mailed free to any part of the world. We will open accounts with responsible importers furnishing American references. Orders accepted through New York commission houses.

THE HOOK-HARDIE COMPANY,

37-52 Hook Building,

HUDSON, MICHIGAN, U. S. A.

LOZIER

MARINE GAS ENGINES

Two-Cycle, 3 to 15 Horse-Power. Four-Cycle, 15 to 100 Horse-Power.

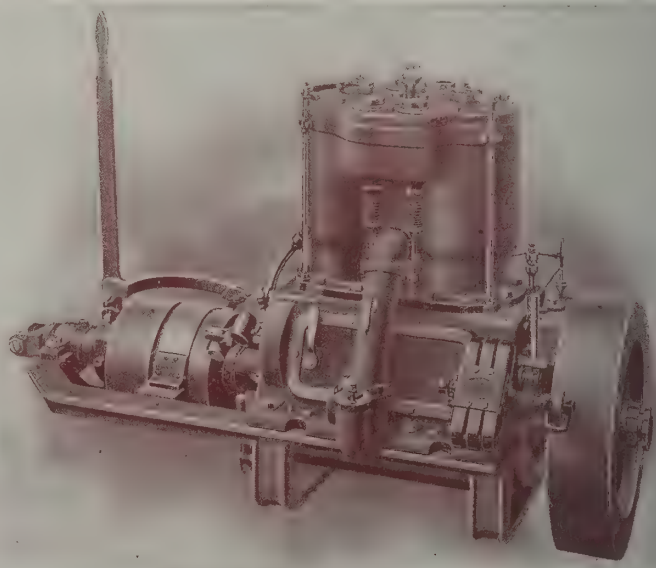
SIMPLE
IN DESIGN.
ECONOMICAL.
QUIET
AND POSITIVE
IN ACTION.
"AN IDEAL
GASOLINE
ENGINE."



Lozier 25-foot 5 H.-P. Launch.

We build Open, Half-Cabin or Full-Cabin Launches from 12 to 62 feet in length.

Accepted
as the Standard
and
Most Popular
Gasoline Engine
in the
United States of
America
and Now
Being Adopted
Throughout the
Entire
Civilized Globe.



The Lozier 20-Horse-Power Four-Cycle Engine.

Our Catalogue, thoroughly describing and profusely illustrating our Engines, published in the English, Spanish, German, French, Italian, Swedish, Danish and Finnish languages, mailed postpaid to all parts of the world.

THE LOZIER MOTOR CO., 1 BROADWAY,
NEW YORK, U. S. A.

Cable Address: "LOMOCO," New York.
Lieber, Western Union, A B C 4th and 5th, A1 and Private Codes.

The "New American"

IS THE

Turbine for Export.

Why?

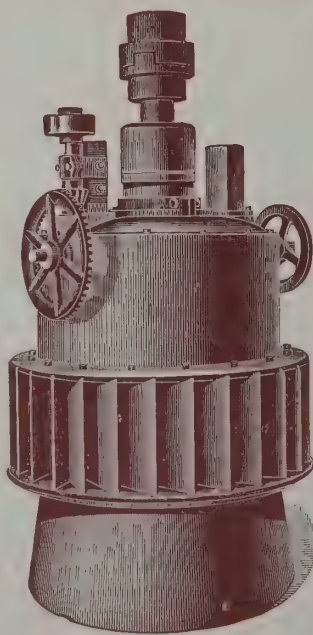
Strength, durability and interchangeable parts reduce repairs to a minimum.

Great power for the diameter.
Economy in use of water.

Vertical or Horizontal Installations
to meet requirements.

Our Catalogue, which will be mailed on request, furnishes detailed description.
We also manufacture Gas and Gasoline Engines, Paper and Pulp Mill Machinery, and a full line of Power Transmission Machinery.

**THE DAYTON GLOBE
IRON WORKS CO.,**
DAYTON, OHIO, U. S. A.



We Make the Largest Line of SAW MILL MACHINERY in the World.

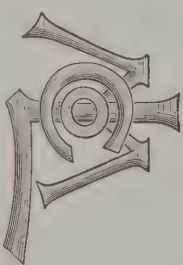
The Greatest Lumber Maker Is the Circular Mill.

THE BEST CIRCULAR IS THE

LANE'S PATENT LEVER SET.

HIGHEST AWARD—Gold Medal at the South Carolina Interstate and West Indian Exposition.

Adapted to all kinds, sizes and lengths of logs; any size from 3,000 feet up daily capacity; single or double, right or left hand.



No. 3 MILL.
With Center Guide for Steam Feed.
Can furnish with Heavy Friction Feed for Water Mills, also with Steel Tracks on Steel Axles extending across the Carriage and Steel Fall Track, instead of Chains and Rails and Center Guide, if preferred.
Right or Left Hand, Single or Double.

LANE MANUFACTURING CO.,
MONTPELIER, VERMONT, U. S. A.



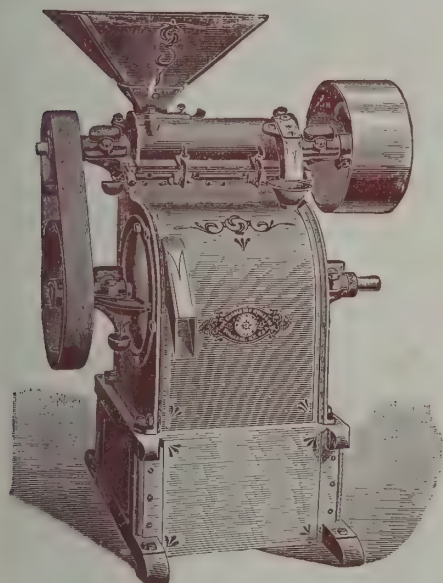
We also manufacture Saw-Mill Set Works, Digging Devices, Etc., Water Wheels, Log Jacks, Cutters and Sizers, Dryer, Swing and Friction Feed Cutting-Off Saws, Live and Dead Rolls, Edgers, Trimmers, Cutting-Off Tables, Lath, Shingle and Clapboard Machines, Planers and Matchers, Transmission Machinery and the Anderson Patent Traveling Cranes.
Circulars and Prices on Application.
Specify "LANE," and when ordering, to avoid errors, please mail us a duplicate of order.

The American Exporter

WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIII. NEW YORK, MARCH, 1904. No. 4.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

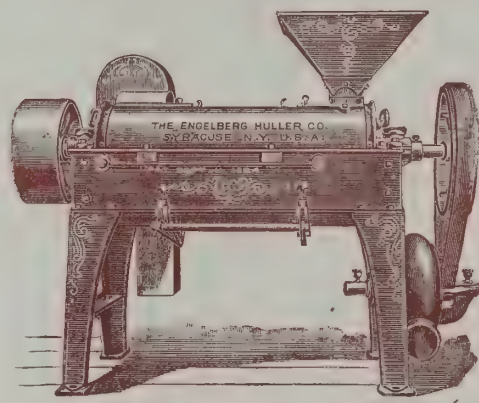


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the **Only** machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.



Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

THE ENGELBERG HULLER COMPANY, P. O. Box B,
Syracuse, N. Y., U. S. A.
Export Office: 339 Produce Exchange, New York City.

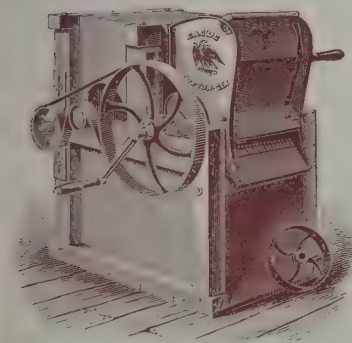


Lunkenheimer Specialties—

Honestly made and always of good value; wherever exhibited invariably carry off the highest honors. Specify "Lunkenheimer" make and order from any leading export house. Write for Catalog of Superior Brass and Iron Valves, Steam Traps, Safety Water Columns, Whistles, Injectors, Lubricators, Oil Pumps, Oiling Devices, Oil and Grease Cups, Etc.

ALL GOODS RIGIDLY TESTED AND INSPECTED BEFORE SHIPMENT.

THE LUNKENHEIMER CO., Cincinnati, O., U. S. A., Sole Makers.
New York, 26 Cortlandt Street. LONDON, 35 Great Dover St., S. E. PARIS, 24 Boulevard Voltaire.

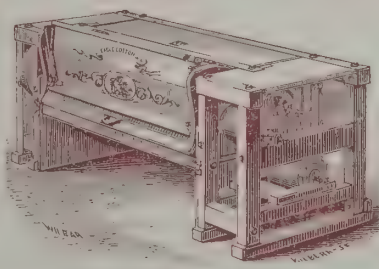


Hand Gin.

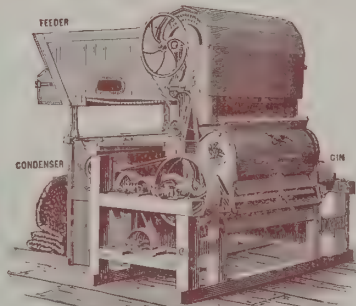
EAGLE COTTON GINS.

These Gins enjoy a **BETTER REPUTATION** THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are **PREFERRED** to all others made, on account of their **STRENGTH, SIMPLICITY, DURABILITY**, the amount and **EXCELLENCE** of the work they accomplish, and the **RAPIDITY** of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

CONTINENTAL GIN CO., Inc., BRIDGEWATER, MASS., U. S. A.

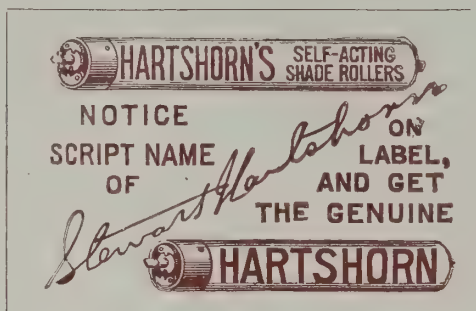
Successors to **EAGLE COTTON GIN CO.,**

Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

BEWARE
OF
IMITATIONS



BEWARE
OF
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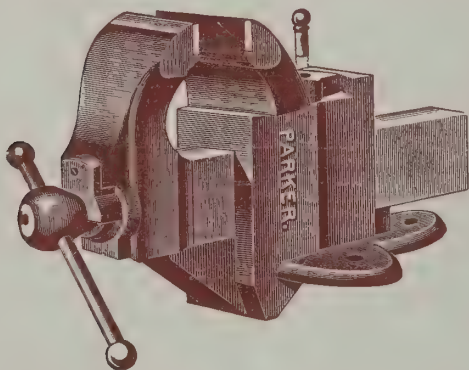
Sold All Over the World. Order through your Commission Men.

STEWART HARTSHORN CO.

Office and Factory:

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Stockroom: No. 7 Lafayette Place, New York.



THE

Parker Vise

Unequaled for
Strength, Durability
and Finish.

Has stood the test of over
50 YEARS.

EVERY VISE MADE FOR
SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP
USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over 60 YEARS and will stand comparison with any Mill in the market.

We manufacture a line of

Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

Enquiries concerning our line will have prompt
attention. Catalogues on application.

THE

CHAS. PARKER CO.,

MERIDEN, CONN., U. S. A.

NEW YORK SALESROOM: 96 CHAMBERS STREET



DIETZ Nos. 30 and 60 TUBULAR SEARCH LIGHTS.

These lamps are made for outdoor or indoor use. They give a powerful and brilliant light, and are not affected by the wind.

They are suitable for use in mills workshops, warehouses, stables and summer resorts, or in any other place where a good light is required which will not be affected by strong breezes.

Where it is desired to light up a long row of animals or a long, narrow room of any kind, these lamps are especially desirable.

No. 30 is fitted with our patent bull's-eye lens on perforated plate, adding to the appearance of the light.

No. 30 has a blizzard globe, 1-inch wick and a bright tin reflector 12 inches in diameter. Price, \$30.00 dozen.

No. 60 has a No. 2 globe, 1 1/2-inch wick and a bright tin reflector 16 inches in diameter. Price, \$72.00 dozen.

We are pleased to send complete catalogues (Spanish or English) and price list to those interested.

R. E. DIETZ COMPANY,

NEW YORK, U. S. A.

Established 1840.



ARCADE MANUFACTURING CO.

(Incorporated 1885),

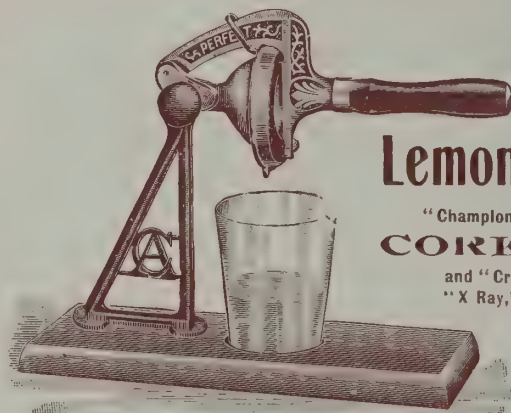
Manufacturers of

"PERFECT" Lemon Squeezers,

CORK PULLERS

"Champion," "Handy" and "Phoenix"
and "Crystal," "Imperial," "Jewel,"
"X Ray," "Royal Pound," "Telephone,"
"New Home" and "Favorite"

COFFEE MILLS.



"Perfect" Lemon Squeezer No. 20.

No. 20. Designed especially for family use. Mounted on wood and can be moved around as desired. The frame is highly polished and nickel-plated. The parts coming in contact with the lemon are made of malleable iron, heavily coated with tin and will not corrode. Sample dozen, boxed ready for steamer, f. o. b. New York, \$12.00. Size of box: 13x17x21 in. Weight: gross, 50 lbs.; net, 36 lbs.

No. 1. Neat looking; reliable. Designed for bars, restaurants or wherever a stationary lemon squeezer can be used. Can be readily detached from bracket or holder for cleaning purposes by simply lifting it out of the socket. Constructed of the same material as No. 20. Sample Dozen, boxed ready for steamer, f. o. b. New York, \$12.00. Size of box: 11 1/2 x 13 1/4 x 23 3/4 in. Weight: gross, 70 lbs.; net, 55 lbs.

Orders received through export houses. Please mail us duplicate of order.

OUR ILLUSTRATED CATALOGUE MAILED POSTPAID.
ARCADE MANUFACTURING CO., Freeport, Ills., U. S. A.
Hardware Specialties Manufacturers.



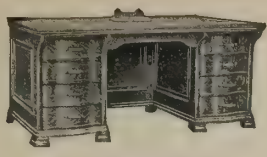
"Perfect" Lemon Squeezer No. 1.

"JUST WHAT YOU WANT."

Gets All of
the Juice and
Gets It Easy.



No. 555—\$20.00.



No. 515—\$100.00.



No. 1—\$36.00.

ESTABLISHED 1880.

GRAND RAPIDS DESK CO.

MANUFACTURERS OF

High-Grade Desks and Sectional Bookcases

FOR THE OFFICE AND HOME.



NEW DESIGNS.

SUPERIOR WORKMANSHIP.

SUPERB APPEARANCE.

Our New Line of Sectional Bookcases and Desks, recently placed upon the market, embody the results of over Twenty Years' Practical Experience in Actual Manufacturing.



Works of the GRAND RAPIDS DESK CO., Muskegon, Michigan, U. S. A.

The prices here quoted are for desks boxed ready for steamer, f. o. b. New York. Orders received through export houses. To avoid errors please mail a duplicate of order to us.

Our 100-page Catalogue, illustrating the various styles of Desks and Bookcases made by us, mailed postpaid.

GRAND RAPIDS DESK CO.

Manufacturers,

Muskegon, Michigan, U. S. A.



No. 4—\$80.00.



No. 8—\$70.00.



No. 10—\$34.00.



No. 6—\$60.00.



No. 5—\$70.00.

The LEONARD Cleanable Refrigerators.

Freely Acknowledged to Be the Best in the World.

Made in GRAND RAPIDS, MICH., U. S. A.

Seven walls to save the ice. Air-tight locks. Sliding, adjustable shelves, and many other improvements. Outside cases, ash with quarter-sawn oak panels, dark golden finish. Walls packed with mineral wool. These prices F. O. B. New York, Boston, Philadelphia or Baltimore, crated for export. The sizes given are: first, width across the front; second, depth from front to back; third, height. All outside measurements in inches.



Single door, zinc lined.
No. 070—Size, 25x17x40.....\$7.19
No. 70—Size, 27x18x42.....\$8.61



Single door, zinc lined.
No. 71—Size, 30x19x45.....\$10.81
No. 71A—Size, 32x20x47.....\$11.65
No. 72—Size, 32x24x48.....\$12.91



Double door, zinc lined.
No. 73—Size, 33x20x46.....\$12.50
No. 74—Size, 35x21x48.....\$14.06



Apartment House, zinc lined.
No. 93—Size, 27x18x49.....\$10.60
No. 94—Size, 29x19x55.....\$12.84
No. 95—Size, 30x20x60.....\$13.96
No. 96—Size, 36x24x68.....\$20.45



Double door, zinc lined.
No. 75—Size, 40x23x50.....\$18.20



Apartment House, zinc lined.
No. 95—Size, 33x21x45.....\$12.16
No. 96—Size, 35x22x58.....\$14.50



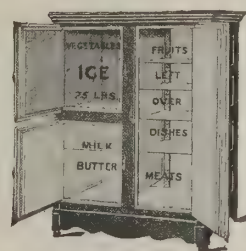
Four doors, zinc lined.
No. 58—Size, 38x22x48.....\$17.75
No. 76—Size, 40x25x57.....\$22.25
No. 77—Size, 43x25x62.....\$24.95



Six doors, zinc lined.
No. 60—Size, 54x31x78.....\$42.60
No. 62—Size, 55x32x79.....\$47.00
No. 66—Size, 64x35x85.....\$58.20



Double doors, lined with real Porcelain on sheet steel.
No. 9—Size, 36x21x47.....\$20.90
Single door, lined with real Porcelain on sheet steel.
No. 2—Size, 31x19x45.....\$16.05



Three doors, lined with real Porcelain on sheet steel.
No. 4—Size, 35x22x46.....\$22.85
Four doors, lined with real Porcelain.
No. 6—Size, 42x28x54.....\$34.85



Four doors, lined with real Porcelain on sheet steel.
No. 57—Size, 47x28x60.....\$40.75



No. 323—Grocer's Refrigerator; wood lined, polished oak cases. Roll top for butter firkins; storage below. Ice in top at rear.
No. 322—2 rolls; size, 46x41x84.....\$65.00
No. 323—3 rolls; size, 68x41x84.....\$81.00
No. 324—4 rolls; size, 90x41x84.....\$105.00

Orders received through any exporter in New York, Boston, Philadelphia or Baltimore, or through our own Export Office, 54 Warren St., New York. E. L. D. Hester, Mgr.

GRAND RAPIDS REFRIGERATOR CO., Grand Rapids, Mich. U. S. A.

THE LEONARD OFFICE SPECIALTIES.

LEONARD SECTIONAL ELECTROTYPE CABINET,

For Electrotypes, Coins, Minerals, Specimens of Natural History, Proofs, Engravings, Tools, Laces, Jewelry, Dental Supplies, Etc. Made of golden finished oak. Each section has 10 drawers 1 1/4 in. deep and is 36 in. wide, 24 in. deep and 10 in. high. Price, f. o. b. cars New York, each Section, \$6.00; Top, \$1.00 extra; Base with Casters, \$1.50 extra. Weight, boxed ready for steamer, 100 pounds.

Leonard Catalogue Cabinet.

A convenient method for filing and classifying over one thousand Catalogues, Circulars, Etc. A Cross Index System accompanies each Cabinet. Made of golden finished oak, highly polished. Size, 32 inches wide, 24 inches deep and 63 inches high. Mounted on strong ball-bearing casters. Price, f. o. b. cars New York, \$27.75. Weight, boxed ready for steamer, 375 pounds.



Leonard Sectional Electrotypes Cabinet.



Leonard Catalogue Cabinet.

LEONARD MANUFACTURING CO., Grand Rapids, Mich., U. S. A.
New York Office, 54 Warren St. E. L. D. HESTER, Manager.

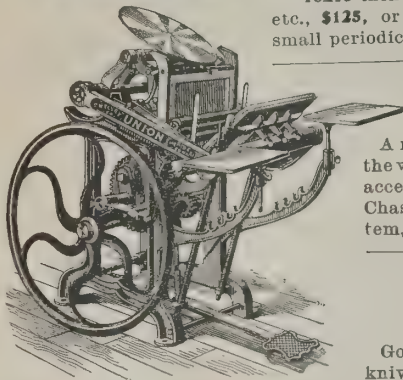


CHEAP PRINTING.

Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **\$40.00.**

10x15-inch Press, with 10 styles of type, ink, etc., **\$125**, or with more type, rules, etc., for small periodical, **\$200.**

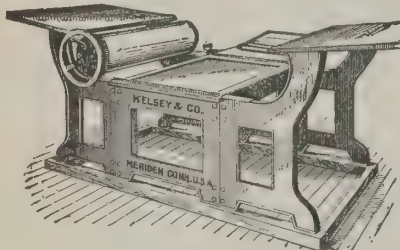


PRESS UNION.

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, **\$200.** Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., **\$400**, outfit included.

CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, **\$12.00.**



Cylinder Press.

For newspaper and large announcements. Bed, 29x43 inches. Price, **\$500**. Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.

C. L. HAUTHAWAY & SONS,

346 Congress St., Boston, Mass.,
U. S. A.

Specialties.



Regular
4-oz. Bottle.

Best dressing put up and warranted in all respects.



Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

For polishing patent leather shoes quickly and without injury to the leather.



"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the



WHITE LILY WASHER.
WASHES LILY WHITE.

White Lily Washer.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is 2 1/2 turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** (\$30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**

Weight, 600 lbs. Measurements: 18x24x24 inches.

WHITE LILY WASHER CO.,

MANUFACTURERS,
DAVENPORT, IOWA, U. S. A.

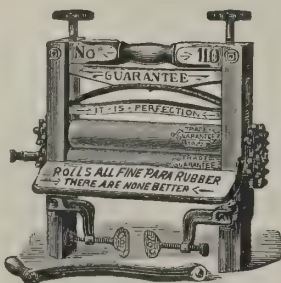
LOVELL MFG. CO.

Erie, Pa., U. S. A.

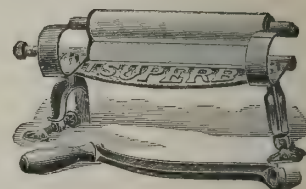
Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS, RAT and MOUSE TRAPS.



Send for
Catalogue
and
Prices.



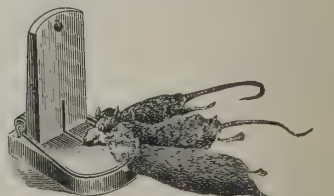
We make a full line of
CLOTHES WRINGERS
for the Export Trade



Delusion
Mouse Trap.

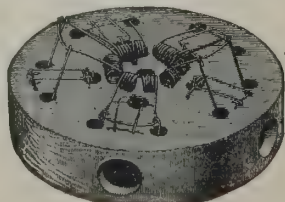


Rex Trap.
Made in two sizes:
large size for rats;
small size for mice.



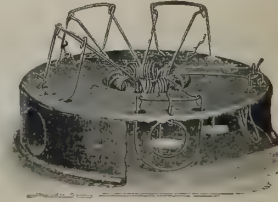
Erie Rat Trap.
Best Trap on Earth.

Requires no setting. **RAT TRAPS**—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch," "MOUSE TRAPS."—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker," "Easy Setting Wood Choker," "Cyclone" "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of
Wringers
in English only
and of Rat
and Mouse
Traps in both
English and
Spanish.



Lovell's Easy-Setting Metallic Mouse Trap.



Griffin Cleaner and Paste Combination

for Cleaning and Polishing Russet and Russia Leather Shoes and all Articles made of Russet and Russia Leather.

NOTE—Our Cleaner contains no Camphor.

Our Cleaner and Paste Combination for cleaning and polishing Russet and Russia Leather Shoes (and all articles made of Russet and Russia Leather) cannot be surpassed, if used according to directions.

The Cleaner cleans and removes stains, and the paste produces a brilliant, durable waterproof polish, which is not sticky or gummy. We also make it in different colors, ox blood and brown.

Our Parisian Dressing.

A Black Dressing for Ladies' Shoes. Is considered by good judges to be the best and nicest put-up 10-cent dressing on the market.



We guarantee it not to contain anything injurious to the leather. It contains oil which helps to keep the leather soft and pliable. Packed in one and three dozen boxes. Price, per gross, \$8.00. Discount, 10 per cent.

Griffin Sterling Combination

Our Sterling Combination for dressing and producing a gloss on shoes made of Box-Calf, Cordovan, Vici Kid, French Enamel and all fine dry black leathers. Cannot be surpassed if used according to directions. It is easily applied, polishes quickly and easily; its lustre is brilliant, durable and not sticky or gummy and will not crack or scale off. It keeps the finest of leather soft. We guarantee it not to injure the leather in the slightest degree, as it contains no acid or other injurious substances.

A circular in each package giving full directions.



Price per gross, large size.....\$14.00

Price per gross, small size..... 7.50

Discount, 10 per cent.

Griffin Russet Leather Polishing Paste.



Our Russet Leather Paste for producing a high gloss on Russet and Brown Leather Shoes (and all articles made of Russet or Brown Leather) cannot be surpassed, if used according to directions. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and yet is not a varnish.

Excellent for vici kid.

We guarantee it not to injure the leather in the slightest degree, as it is free from acids, and will not soil the finest of fabrics.

If the shoe is dirty it should first be cleaned with Griffin Russet Leather Cleaner.

Price per gross, large size.....\$6.00

Price per gross, small size..... 3.50

Discount, 10 per cent.

WORTH WAITING FOR



Griffin Patent Leather Polishing Paste.



Our Patent Leather Paste for restoring the gloss to all articles made of Patent and Enamel Kid Leather cannot be surpassed. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and is not a varnish, as it leaves no coating.

We guarantee it not to injure the leather, as it is free from acids.

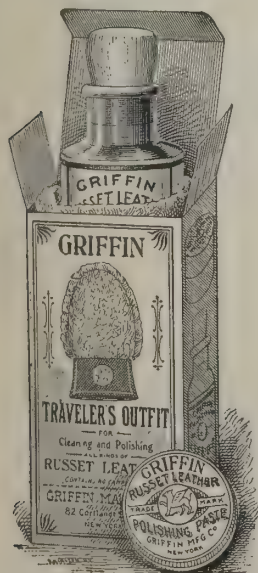
It is invaluable for brightening the saddle and blinders of harness, as the polish is waterproof.

Just the thing for manufacturers of harness to use, as it will prevent the Patent Leather parts from becoming dull.

Price per gross, large size.....\$6.00

Price per gross, small size..... 3.50

Discount, 10 per cent.



Griffin Russet Traveler's Outfit.

An excellent thing to take along when traveling.

Contains a bottle of cleaner for cleaning and removing stains. A box of our polishing paste and a polishing mitten.

Price per gross.....\$18.00

Discount, 10 per cent.

GRIFFIN SNOW WHITE.



For cleaning and re-whitening white shoes made of canvas, suede and buckskin.

Price, per gross, \$10.00.

Discount, 10 per cent.



Griffin Sterling Traveler's Outfit.

For Box-Calf, Vici Kid, French Enamel and all dry Black Leathers.

Put up in a carton. Contains a bottle of Sterling Dressing, a box of Polishing Paste and polishing mitten. Also suitable for Enamel and Patent Leather.

Price per gross.....\$18.00

Discount, 10 per cent.

GRIFFIN

High-Grade Shoe Polishes.

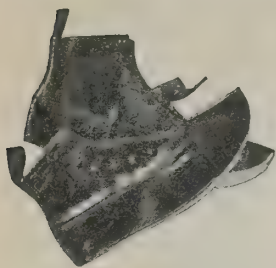
GRIFFIN M'F'G CO.,

Manufacturing Chemists,

82 Cortlandt St.,

New York, U. S. A.

UPPER LEATHERS



SHOE UPPERS.

The American Shoe Manufacturers' Export Company begs to announce that its **LEATHER DEPARTMENT**

is prepared to furnish all kinds of leather for the manufacture of shoes of every description, in large or small quantities. Careful selections; packing in any manner desired and prompt shipments guaranteed

Send us samples of what you use and let us quote prices.

Our Shoes Are Famed All Over the World.

We make more than 500 different kinds for men, women and children—from the cheapest to the best. We also manufacture Shoe Uppers, that is the shoe complete without soles or heels. Send for samples. See above cut.

Our **DIAMOND BRAND SHOE DRESSINGS** are the best on the market, but priced lower than other makes.

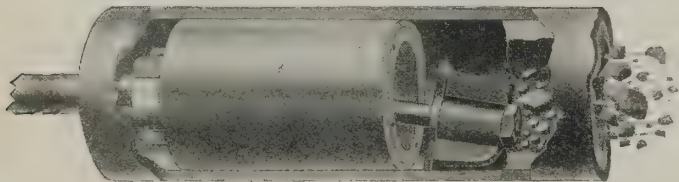
BLANCOLA is a liquid dressing for white canvas shoes that wins favor on sight.

American Shoe Manufacturers' Export Co.,

28 SOUTH WILLIAM STREET, NEW YORK, U. S. A.

President: FRANK BORNN, of Borinn & Co., Exporters and Importers, New York, U. S. A.

You Take Absolutely No Chances IN BUYING THE WONDERFUL



(For Water Tube Boilers)

The same machine can also be used for return tubular boilers, which is provided with a hammer instead of cutter as it appears on this cut.

DIAMOND BOILER TUBE CLEANER.

The only known and successful device for removing scale and soot from return tubular or water tube boilers. Same machine can be used for both styles of boilers by changing the hammer. From 20 to 60 per cent. in fuel saved; prolongs the life of boilers, and is the means of avoiding possible accidents. Our Diamond Cleaner is in use in every part of the world, to whom we can refer you. Every Diamond Machine bears this trademark and is also stamped with our name.

FREE TRIAL.

POWER SPECIALTY COMPANY,

Sole and Exclusive Manufacturers,

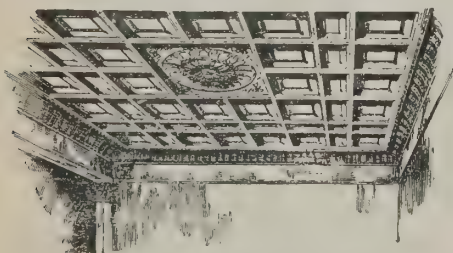
Bridgeburg, Ont., Canada. Berlin, Germany.

Address for particulars Buffalo, N. Y., U. S. A.,

Department "A," 361 Washington Street.



NORTHROP'S Stamped Metal Ceilings,



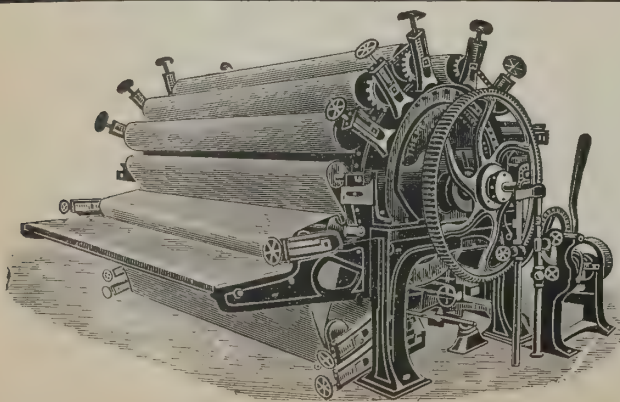
In Soft Sheet Steel,
For All Buildings.

Highest Prize Paris
Exposition, 1900.

Send for Catalogue. Give diagram of the room for an estimate.

**Northrop, Coburn
and Dodge Co.,**

40 Cherry St., New York, U.S.A.



PHILADELPHIA NOVELTY MFG. CO.

Thirteenth and Noble Streets, Philadelphia, Pa., U. S. A.

NOVELTY INKSTAND No. 3



American Novelties

NOVELTY (SELF-CLOSING)
INKSTAND No. 1 (large),
retail, - **75 Cents**

NOVELTY (SELF-CLOSING)
INKSTAND No. 3 (small),
retail, - **35 Cents**

PATENTED SPECIALTIES FOR EXPORT.

All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of *Sydney, Melbourne, Adelaide, Barcelona* and *Paris*, for novelty, workmanship, finish, simplicity, utility and cheapness.

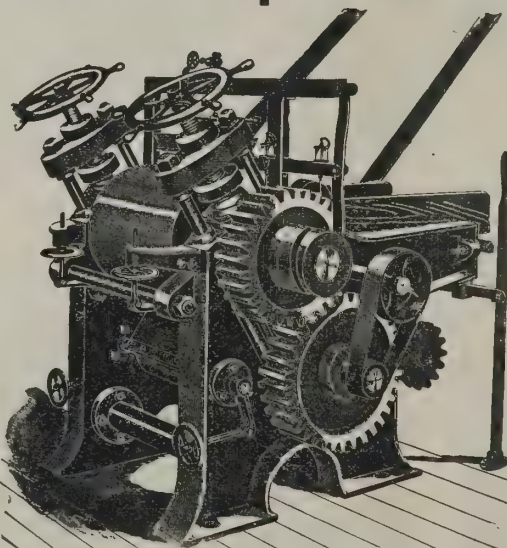
WHOLESALE PRICE LIST.

Novelty Paper Fastener, \$4 doz.; Keystone Paper Fastener, \$6 doz.; Original Paper Fastener, \$12 doz.; Novelty Staples, 15c. per 1,000; Novelty Suspension Rings, 30c. per 1,000; N. Paper Clip, 75c. doz.; P. Paper Clip, 50c. doz.; Novelty Pin Clip, 90c. doz.; The Auto File, \$1.50 doz.; B B C Paper Clip, \$1.50 doz.; Balancing Board Clip, \$2, \$2.25, \$2.50 doz.; Upright Paper Clip, \$1.50 doz.; Accumulator Bill File, \$1.50 doz.; Standard Pen Rack, \$1.75 doz.; Spring Folding Pen Rack, \$2 doz.; Combination Paper Weight and Clip, \$4 doz.; Pocketbook Postage Stamp Holder, \$1 doz.; Automatic Fountain Penholder, \$1.50 doz.; Novelty Inkstand No. 1, \$8 doz.; Novelty Inkstand No. 3, \$3 doz.; Novelty Slate Pencil Sharpener, 40c. doz.; Vest Pocket Glass Cutter, 90c. doz.; Novelty Pocket Knife, \$4 doz.; Novelty Hunting Knife, \$8 doz.; Novelty Pocket Screw Driver, \$4 doz.; Artist's Rotary Kit, \$5 doz.; Self-locking Door Indicator, \$2.50 doz.; Madame Louie Hair Crimper, \$2.50 great gross; Novelty Stitched Hair Crimper, \$1.50 great gross; Automatic Fisher, \$1.50 doz.; Automatic Towel Holder, \$1 doz.; Suspension Gas Wrench, 60c. doz.; Novelty Skein Holder, \$4.80 doz.; Keyring Door Securer, \$1.50 doz.; American Mincing Knife, 1, 2 and 3 blades, 75c., \$1.25 and \$1.75 doz.; The Masticator, \$1.75 doz.; Duplex Can Opener, 80c. doz.; Universal Wardrobe Shelf Bracket, \$1.50 doz.; Double Match Box, Bracket, \$2 doz.; Universal Washer Cutter, \$8 doz.; Novelty Pen Puller, 40c. doz.

Discounts 20 per cent. from above list. Send your order through any responsible U. S. export commission house. All such houses in New York handle our goods. Catalogue free. New articles constantly appearing. Goods shipped to all parts of the world.

THE Latest Improved Stem Roller

ON THE
MARKET.



Of very strong construction and containing the very best in workmanship and material throughout.

It will press stems to a thinness not easily distinguished from the leaf in the manufactured product.

It is also provided with a Roll-Moistening Device, insuring constant moistening of the rolls.

References:

MURAI BROS., Kyoto, Japan.
N. KIMURA & CO., Tokio, Japan
WARNICK, BROWN & CO.,
Utica, N. Y.
ROCK CITY TOBACCO CO.,
Quebec, Canada
CLAUSSEN TOBACCO CO.,
Baltimore, Md.

For prices and full particulars write

JOHN B. ADT MACHINE WORKS, Baltimore, Md., U. S. A.

IRONING, DRYING AND FINISHING

BED and TABLE LINEN at a cost of from 10c. to 60c.
per 1000 pieces on this famous

Used by over 265 of the
Largest Laundries and Hotels
in the United States and Canada.

Annihilator Mangle.

The Waldorf-Astoria Hotel, the largest in America, irons from 35,000 to 45,000 pieces daily on these machines without the use of a dryroom.

FOR STEAMSHIP, HOTEL AND RESTAURANT WORK THIS MACHINE HEADS THE LIST AS A MONEY-MAKER IN PUBLIC LAUNDRIES.

Made in seven sizes, with capacities from 5,000 to 35,000 pieces daily. Importers should send for our catalogue and discount sheet. We handle a full line of modern Laundry Machinery.

EXPORT LAUNDRY MACHINERY CO., 74 West Houston St.,
NEW YORK, U.S.A.
Cable Address: "NIHILATOR."

CONTINENTAL CAR AND EQUIPMENT CO.

FOREIGN DEPARTMENT:

Whitehall Building, Battery Place, New York, U. S. A.

Cable Address: "CONEQUICO," New York.

MANUFACTURERS OF

Railway Freight, Plantation, Industrial and Mining Cars.

We also make Special Cars for all purposes, from designs furnished, or will furnish our own designs upon request.

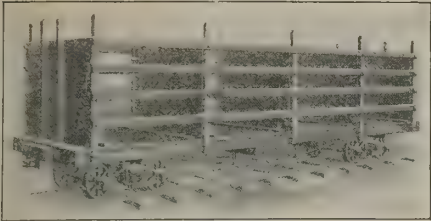
FOR FOREIGN MARKETS.—Our Cars are taken apart and packed for shipment according to the best known methods.

Our Catalogue (English and Spanish), illustrating and describing the various styles of STANDARD CARS made by us, mailed postpaid.

Please mention THE AMERICAN EXPORTER.



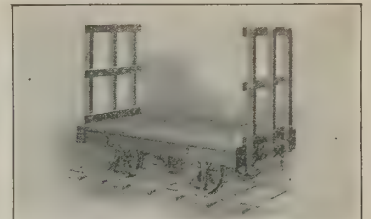
ALL-STEEL FLAT CAR.



CUBAN CANE CAR.



GONDOLA CAR.



PUERTO RICAN CANE CAR.

BALKE MANUFACTURING CO.,

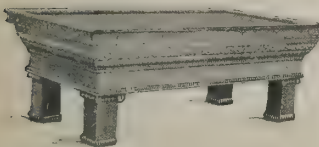
Patentees and Manufacturers of

**Balke Combination Davenport, Billiard and Pool Tables,
and Standard Tables.**

INCORPORATED \$100,000.



Style "A," as a Davenport.



Benedict Special Billiard Table.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note—The prices here quoted, U. S. Gold or its equivalent, are for Foreign Markets Only, and include boxing ready for steamer, delivered f.o.b. cars at New York City.

Style "A," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

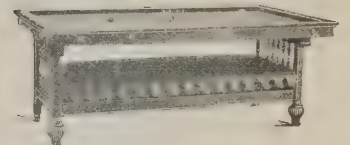
Style "A," converted into a Billiard or Pool Table, has a playing surface of 3½x7 feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, \$95.00. Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: 4'x8'x6'; 32'x36'x6'.

Standard Billiard Tables.

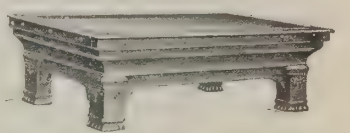
"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4x8 feet. Price complete, \$100.00. Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: 4'2"x8'2"x8"; 4'x8'2"x2'.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, 3½x7 feet. Price complete, \$90.00. Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: 4'x8'x8'; 3'6"x6'x2'.

Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order. Our catalogue, illustrating and describing the various styles of Billiard and Pool Tables manufactured by us, mailed postpaid.



Style "A," converted into a Billiard Table.



"Den" Special Billiard Table

BALKE MANUFACTURING CO., Grand Rapids, Mich., U. S. A.

White Enamel Refrigerator Co.,

ST. PAUL, MINN., U. S. A.

Owners and Manufacturers of

**Bohn's Patent Dry Air Syphon System
of White Enameled Refrigerators.**

The Bohn Dry Air Syphon System insures a low and uniform temperature, ranging from 38 to 48 degrees Fahrenheit. With our Enamel Lining, you need only to wipe the food compartments with a damp cloth to clean perfectly. The only absolutely sanitary refrigerator made.

Adopted and used exclusively by the Pullman Company for all of their Dining and Buffet Cars. Pennsylvania Lines, New York Central, Michigan Southern, Union Pacific, Canadian Pacific and all other railways throughout "the States" and Canada as well as by thousands of homes, hotels and clubs.

For Foreign Markets Only.

The prices here quoted includes boxing ready for transportation and delivered F. O. B. cars at New York City.

No. 2. Style "A." Panel Door. Price, \$23.00. Outside measurements (inches): Width, 38; depth, 21; height, 44. Weight, boxed, 278 pounds.

No. 5. Style "D." Upper Door Glass. Price, \$49.00. Outside measurements (inches): Width, 48; depth, 26; height, 66; weight, boxed, 540 pounds.

NOTE—Orders received direct, or through export commission houses. When ordering through the latter, to avoid errors, please mail us a duplicate of order.

Our forty-page catalogue, illustrating and describing the various styles of White Enamel Refrigerators made by us, mailed postpaid.



No. 2. Style "A." Panel Door.



No. 5. Style "D." Upper Door Glass.

The WATROUS SANITARY SPECIALTIES

The Watrous Combination Bath Fixture.

This fixture supplies hot or cold water or any desired mixture, by simply turning the handle to the right or left. To empty bathtub, simply lift the handle.

It is the only perfectly sanitary bath fixture made, as the tube is always filled with clean water direct from the supply instead of from the tub, and therefore impossible to become foul.

Has an independent supply passage direct to tub. **Can be attached to any bathtub.** Is constructed with ordinary Fuller balls. Is simple, cheap, durable and heavily nickel plated.

Upon receipt of price we will box, ready for steamer, and deliver F. O. B. cars New York, as follows:
One (1) Watrous Aquameter Water Closet, complete (Fig. "A 4.") as shown. Six (6) cubic feet. Weight, 100 pounds. \$30.00
One (1) Combination Hot and Cold Water Bath Fixture, as shown. ¾ cubic feet. Weight, 17 pounds. \$15.00

Our sanitary specialties are protected by U. S. and foreign patents. Our illustrated booklet mailed, postpaid, to any part of the world. Please mail us duplicate order when ordering through commission houses.

The Watrous Aquameter Water Closets.

Adopted by **The Pullman Company** and **all important Railway and Steamship Companies** in the United States.

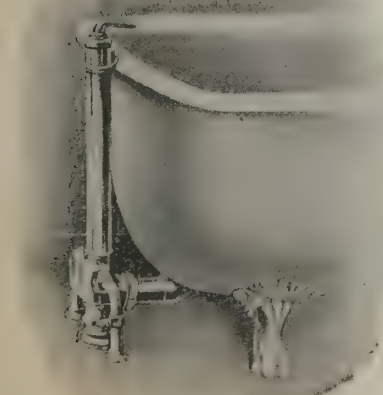
These closets have no equal for **Public Buildings, Residences, Steamships, Private and Parlor Cars.**

The closet shown operates perfectly with ½-inch or ¾-inch pipe, according to pressure.

Connected direct to service pipe, without any tank. Uses from one to three gallons of water to each flush. Saves 50 per cent. in water bills. Noiseless and positive in action. Neat and durable. Successful everywhere. Fully guaranteed. Thousands in use everywhere.



Figure "A 4."
Watrous Aquameter
Water Closet.



Watrous Combination Hot and Cold Water Fixture.

THE WATROUS COMPANY, Manufacturers, CHICAGO, U. S. A.

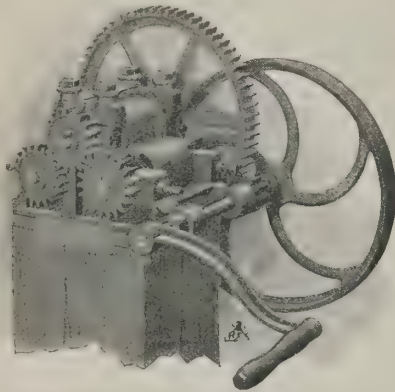
GEO. L. SQUIER MFG. CO. OF BUFFALO,

Manufacturers of "American" Sugar, Coffee and Rice Machinery,

Estimates cheerfully furnished on Complete Plantation Outfits.

BUFFALO, N. Y.,
U. S. A.

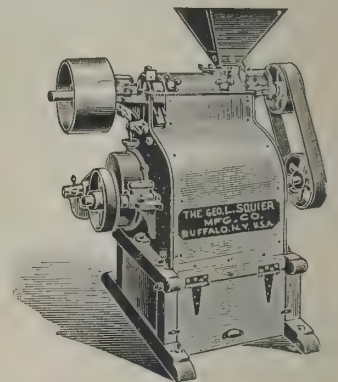
Correspondence solicited
in any language.



No. 2. "PIONEER" Hand-Power Cane Mill.

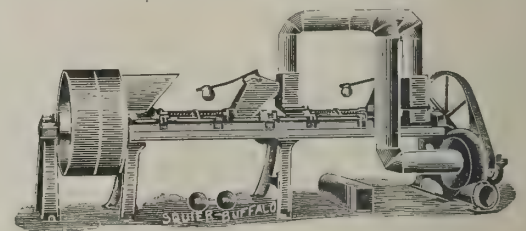


Multiple Evaporating Vacuum Effects. All capacities.

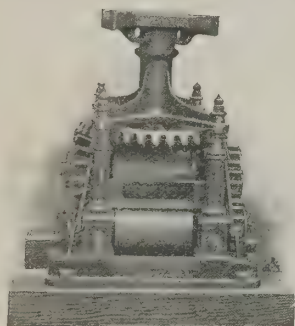


"PARAGON" Rice Huller and Polisher.
Capacity 4,000 to 6,000 pounds
in twelve hours.

Complete Coffee Catalogue
on application.

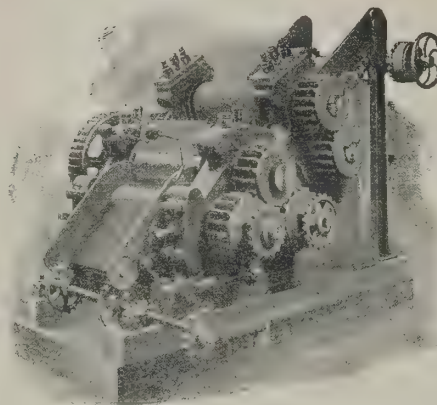


"AMERICAN" Coffee Huller No. 3.



"PEARL" Horizontal, Animal-Power
Cane Mill. Ten sizes.

Write
for
Latest
Sugar-Cane
Machinery
Catalogue
just
issued.



"CUBA" Three-Roll Mill and Two-Roll Crusher. All sizes.

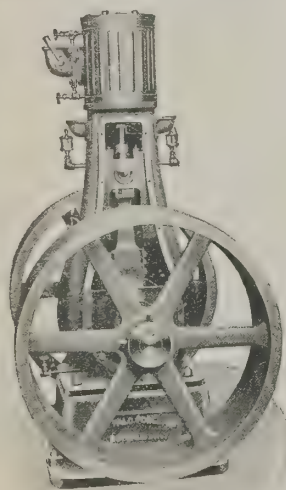
BUFFALO AUTOMATIC ENGINES.

HIGH SPEED, HIGH GRADE,
Horizontal, Vertical,
Simple, Compound,
Direct-Connected.

Buffalo Portable Forges.

AMERICA'S BEST.
THE WORLD'S STANDARD.

60-types and sizes-60
Adapted to all
grades of work.

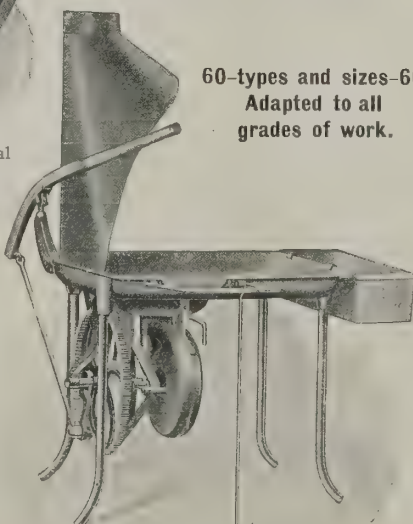


"BUFFALO" Single Vertical
Engine.

Buffalo Engines

Excel in
Simplicity of Design,
Durability of
Construction and
High Steam Economy.

The highest grades of
material and workman-
ship obtainable are used
in their construction.
Write for latest cata-
logue. Free for the ask-
ing.



"OLD RELIABLE" Buffalo Blacksmith's Forge No. 0.

BUFFALO STEAM PUMPS.

PUMPS for every known duty.

FOR

Sugar Houses,
Mills,
Factories and
Plantations.

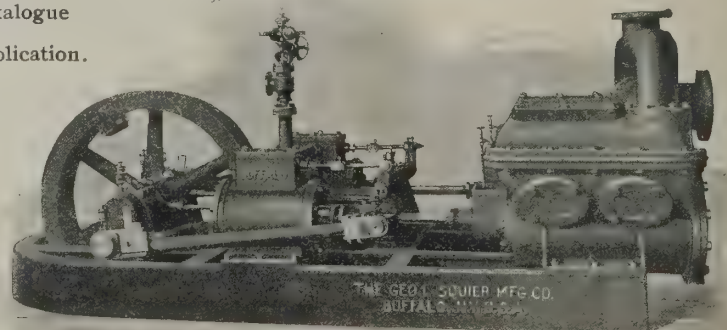
WATER, JUICE AND
SYRUP PUMPS.

HIGH-GRADE STEAM AND POWER PUMPS.
SINGLE, CYLINDER, INDEPENDENT AIR PUMPS
AND JET CONDENSERS.

Latest
Catalogue
on
application.



"BUFFALO" Boiler Feed Pump.



"BUFFALO" Fly-Wheel Vacuum Pumps. Simplex or Duplex Styles. All sizes.

BUFFALO FORGE COMPANY, Buffalo, N. Y., U. S. A.



[Founded by ROOT & TINKER, 1877].

WITH WHICH IS INCORPORATED

THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by HOWARD LOCKWOOD & Co., 1877].

THE JOHN C. COCHRAN COMPANY, - - - Publishers
Bennett Building, New York.

EDWARD W. DREW, - - - Editor.

Published on the 1st of each month.

Subscription, to any part of the world, \$2.00, or an equivalent sum in any other currency. Single copies, 20 cents each. Advertising rates on application.

Entered at the New York Post Office as Second-class Matter.

OUR ADVERTISERS.

AN Australian importer, in sending in his subscription last month to THE AMERICAN EXPORTER, had this to say about it: "You print a very interesting paper, and I want to read it regularly. I have been getting copies of it irregularly, but I cannot do without it regularly. My business is increasing and I must have it promptly. Your reading matter first attracted my notice, but in looking over the advertising columns I found the announcements of so many reliable firms dealing in goods we want in Australia that I think your advertising pages are better than a monthly trade directory. Firms that advertise in a journal of your high standing must be reliable, and you have so many of them that it is not necessary to go further. I have had occasion to give orders to some of your advertisers, and the orders have been filled promptly and satisfactorily. I am building up a good business out of an unpromising one through having received a stray copy of your publication about two years ago. Until now I have not appreciated the necessity of getting it promptly every month. I have found it as essential to my business as is my store. I hope you will have every success."

Letters of this nature are pleasant to receive. The writer is quite right in assuming that only reliable firms are admitted to the advertising columns of this journal, and he is quite right also in assuming that its columns contain the announcements of the bulk of American manufacturers of reputation and standing who are engaged in the export trade. There are, of course, exceptions to every rule, for there are some few exporters who do not realize the value of addressing their announcements to prospective customers, preferring, as they may, to let the customers seek them, something that, of course, rarely occurs. In this connection, an extract from a letter from a customer which one of our advertisers was good enough to forward to us contained this philosophical declaration:

"I only know you through your advertisement in THE AMERICAN EXPORTER, but any firm that is big enough to advertise in THE EXPORTER is good enough for me to do business with and will take care of my orders all right."

THE AMERICAN EXPORTER has always been as careful of the quality of its advertisements as it has been of its reading matter, and the result has been entirely satisfactory both to its readers and to its publishers. Its advertisers have invariably been successful and the customers have been pleased. In the export trade, as in other lines of business, this trite saying applies forcibly: "Winners are advertisers; advertisers are winners."

THE efforts of Secretary of State Hay, on behalf of the American Government, to preserve the integrity of China and prevent other nations from taking part in and thereby spreading the extent of the Japanese-Russian war, seem to have met with general favor throughout the world.

BIG FIRE BRINGS OUT GRIT.

AMERICAN cooperation, enterprise and genuine pluck were displayed in a characteristic manner last month, on the occasion of a big fire in the city of Baltimore, State of Maryland. This fire did over \$100,000,000 of damage, and wiped out most of the business section of a prosperous and well-built municipality. In point of fighting the fire, which was not checked for more than half a day after it started, the local fire department was inadequate. The whole city would have been wiped out but for the prompt assistance given by other municipalities. Scores of nearby cities sent fire apparatus to burning Baltimore, the chief and most effective detachments going from the cities of Philadelphia, 90 miles away, and from New York, 180 miles from the fire. Two trainloads of fire engines and apparatus, enough to completely protect some smaller cities, went from New York alone, and it was this effective help that saved the remainder of the burning city. The promptness with which New York firemen went to the fire 180 miles away was a tribute to their excellent discipline and their quick transportation showed splendid service by the railroads. The Baltimore firemen do not appear to have been derelict, nor was the city badly built. The calamity was simply one that human foresight could not have averted. The lesson of it is the wonderful display of helpfulness of countrymen in distress or danger that is natural to Americans.

The fire itself will go on record as one of the most disastrous, in property loss, that we have ever had, but it brought out many strong points of our countrymen. The flames were still seething through the city, the telegraph offices had been destroyed, and the newspaper plants had been burned. The daily newspaper men were the first to act. They made arrangements with plants in the city of Washington, forty miles away, to get out their regular issues; and, considering the disadvantages and distance, accomplished remarkable results. Not a newspaper missed its regular issue, and the Baltimore papers, gotten out forty miles away, in new, temporary homes, within six hours after the destruction of their own offices, told the story of the fire that was still leveling blocks of costly structures. The morning newspapers came out almost on time, and gave their readers complete accounts of the conflagration as far as it had gone. It was then that the business men of Baltimore realized the extent of their apparent misfortune. Instead of counting their losses, they began at once to find out how they could repair the damage. The telegraph wires were restored even before the fire was checked, and merchants and manufacturers kept them busy with messages about new goods and new machinery. Contractors and builders were in immediate demand, and owners of property out of the fire's path were as busy negotiating with the homeless merchants as were the firemen in trying to check the spread of the conflagration. The Mayor of the city issued a proclamation in which he said a new Baltimore would arise from the ruins, "more beautiful and greater than the old city." That was the spirit of his people, and they gave evidence of its genuineness by their actions. The blow was one that would destroy any city that was not inhabited by men of enterprise, grit and courage. Baltimore was a beautiful city. There was little left to be desired. But the new city will be so much better that it will come to be called in future years a shining monument of the chief characteristics of the American people of the current era. The fire has but served to spur Baltimore's citizens to take a more active part in our progressiveness.

JAPANESE are certainly progressive commercially. In that empire foreign commercial agents are exempt from all tax as commercial agents, their samples are admitted free of duty, and every means is taken to give them full opportunity for introducing and marketing their wares. Precautions are taken, of course, to prevent imposition, but these regulations are not irksome in any way.

OUR exporters are much interested in the agitation for a further extension of the international parcels post. Lower rates and larger packages would certainly facilitate the transmission of samples and tend to increase trade.

"CORNERS" IN COMMODITIES.

THE advance of the cotton market in America last month to a point where the price of that commodity was placed as high as 18 cents per pound would have caused a panic six months ago. Nevertheless, it was a remarkable event in the history of the market, and will have a world-wide effect on the future of cotton. The speculators have made enormous fictitious fortunes in advancing prices, and outsiders who have tried to get into the combination have come out of it singed. There are speculators everywhere, but they have rarely been able in recent years to control such a commodity as cotton for so protracted a period. Their course has been one of detrimental effect upon this country, as well as other countries, largely because we grow cotton crops only once a year. The ultimate result will be to make cotton cheaper than it ever has been, except as to its reasonable, rational value as a commodity, for the extraordinary prices will cause American cotton growers to plant probably double the usual acreage for the new crop, new men will be induced to cultivate the plant which produces the now costly article of commerce, and the attention of men of keen anticipation of future riches in other zones that correspond to our cotton belt has already been attracted by the fabulous fortunes and exorbitant profits that now seem to attach to cotton.

Nothing that we might say would change the purpose of any of these new cultivators, but it is nevertheless a fact that the cotton cornerers have overreached themselves to an extent that will cause a reaction beneficial to all the interests involved, except those of the speculators. That has been the history of all corners in commodities or staples in America. It is not long since a man died in this country in an almost penniless condition. He cornered grain and made so many vast fortunes while at his zenith that he was accounted the richest man in the United States. The reaction that we predict in cotton occurred in grain. The speculator lost all he had made in trying to stem the tide of lower prices due to the increased production which he himself had provoked. This man lasted longer than the cotton magnate of the present can possibly last. It was in September, 1888, that P. B. Hutchinson, colloquially called "Old Hutch," made \$3,000,000 in one day in his famous wheat corner. He lifted the price of wheat to \$2 a bushel. It had been under the dollar. The same wheat now ranges around 75 cents a bushel, but that is only one of the effects of the greater activity which was caused by \$2 wheat. On the Chicago Board of Trade in August, 1893, "Old Hutch" was compelled to offer his membership for sale, and it realized a very small price. In five years he had come to the limit of fighting the fertility of the soil and was overcome by the enormous impetus he had given to grain growing. In fact, he had lost everything in his futile efforts to stem the tide of agricultural activity and bucolic prosperity which he had started. Times have changed since "Old Hutch" met his Waterloo. Improved agricultural machinery, quicker appreciation of possibilities and other elements that are working in the upbuilding of the American nation will cut down "Old Hutch's" three or four years of continued profitable activity, more than a decade ago, to possibly one year, not more than two, in the cotton-growing industry.

A year ago we called attention to efforts that were then being made, with some apparent prospect of success, to corner the coffee market. The first attempt to corner this market occurred at about the time "Old Hutch" was preparing for his *coup* in grain. The attempt caused a panic. Other efforts were made in subsequent years, but without really important results. The latest attempt, engineered by some of the cotton cornerers, has proved a miserable fiasco. Dating back from 1887 there have been periodical efforts to corner coffee, but the high prices forced in the panic of that year so stimulated production that subsequent attempts to put the commodity up to abnormal prices have been unsuccessful.

Corners in commodities have had their day. The cotton corner will be the last one, in all probability. The world is growing, and nature is becoming more productive every year. Men with money enough to control any commodity that comes from the cultivation of the soil are wise enough to study the history of such attempts, and as time goes on there will be fewer of them who will risk their riches

in what is practically a fight against nature, aided by ambitious men and the improved agricultural machinery that American manufacturers place within easy reach of everybody throughout the world.

The cotton corner has done incalculable harm to hundreds of thousands of people, but its after effects will be beneficial to myriads of people on both continents. The increased cultivation of the plant will give increased employment to many more people, manufacturers of machinery used in the industry will find increased call for their products, and the general consumption of cotton-made goods will be so much greater that the mills will have more to do. Meanwhile it may be said for the benefit of our foreign readers who may be attracted by the prospects of profitable cotton cultivation that American manufacturers produce as good machinery for use in the industry as can be obtained anywhere.

THE MACHINERY INDUSTRY.

THE trade in machinery, both for export and domestic purposes, has shown a gratifying improvement recently. Some features of it which apply to both branches of trade are interesting, for they are evidence of the fact that our manufacturers are giving the best possible products for the prices which they charge. Sales of small engines, including steam, gas and hot-air engines, have increased, while the demand for other motors and power equipment machinery both at home and abroad have shown a decided and satisfactory gain. There is no reason why this condition should not prevail, for American manufacturers are always striving to excel perfection, if that can possibly be done.

The sale of agricultural implements for export has also increased in the last two months, and the demand for mining machinery and power equipment, as well as for machine tools, has shown a marked advance over corresponding previous periods. Without going into statistics and details, which would not interest our readers, it may be said that the situation in respect to the articles mentioned is so favorable that it deserves the attention which we call to it at this time.

The American manufacturers of the present day are shrewd business men, who give their customers the very best that they or anybody else can give. They desire to keep their patrons and know how to do it. The result is not unexpected, but the apparent growth of trade is less than the real growth, for durable implements last longer than the others and do not require replacing so frequently.

THE BIG DAKOTA AFLOAT.

THE mammoth trans-Pacific steamship, Dakota, built upon the Atlantic Coast, was successfully launched last month at New London, U. S. A. It was an event no less notable than that which was described in THE AMERICAN EXPORTER last May, when the Dakota's twin sister, elder by a few months in launching, but still a twin in details of construction, was sent into the American River Thames. Each of these ships is a remarkable tribute to modern American shipbuilding, an industry which has lagged until recently. Each is the biggest cargo carrier in the world, each is the largest ship ever built in America, and both are being put together in a substantial shape and style that will do credit to their enterprising builders and to the country whose flag they will fly.

James J. Hill is the head of the company that owns the ships. He has such faith in the Pacific Ocean commerce of the United States that his company has invested \$5,000,000 in these two great vessels. No subsidy has attracted Mr. Hill and his associates. Their only incentive is faith in the future of the commerce of their country. Such faith cannot fail to meet a full realization.

SOME notion of the progress made by experts in the metal industry is conveyed to the average reader when he is informed that at the recent quarterly meeting of the British Iron and Steel Trade a paper was read on "The Diseases of Steel," which was followed by a learned technical and practical exposition of the ailments of the metal, although one member did express a preference for the word "mysteries" in place of diseases.

REASONS FOR AMERICAN SUCCESS.

ONE of the contributing reasons to the success of American merchants may interest some of our foreign readers. It is difficult to approach the subject without encountering the suspicion that some moral lecture is involved, but the change in habits of New York and other American business men within the last decade is so noticeable that in its effects, as described by shrewd observers, it marks an important step in the progress of the country. The *New York World* recently printed a page of very interesting matter on the subject, but it gave its information in a shape that appealed more to the men who have not been successful—such few as we have in America—than to others. The successful New Yorkers, as a general proposition, are not entirely abstemious in the matter of using spirituous liquors, but they are not what may be called tipplers. The *World*, in its article, mentions numerous successful Americans who have never been heard of outside of this country, and shows that their habits of life are regular. They arise early, go about their business and enjoy recreation, retiring at a reasonably early hour. Most of them are abstainers from wine and other liquors until the day's work is over, and they never drink intoxicants between meals during the day.

This is a notable change from the customs of ten and twenty years ago, or even longer. Drinking and the so-called good-fellowship that went with it were once supposed to be essentials of all business transactions, just as they are now to a very limited degree. Some wise man, whose name is unknown to fame, discovered about fifteen years ago that he could sell his goods to better advantage by omitting the item of "entertainment" that was invariably charged to the purchase in his bill without the latter's knowledge. He is reported at the start to have found difficulty in convincing buyers that his wares were equal to the others', but he won out and his victory marked the beginning of the decline of the "drummer" or commercial traveler. Business men began to buy goods for their intrinsic worth, not for the sake of the entertainment in the way of theaters or dinners that the seller might give them. There was a hard fight against the innovation, and it was not successful until some hard-headed merchants found competitors selling the same goods at lower prices and sought to ascertain the reason. When they discovered that they could buy their goods on equal terms with their competitors, if the "entertainment" of their representatives was cut out there was the beginning of a revolution in the wholesale trade in the metropolis of America.

The revolution has been going on ever since, and rivals are selling their goods upon their merits, with very few exceptions. All of which, our foreign readers will naturally say, is of little interest to them. But the effect of it all has been of immeasurable importance to them. Twenty years ago and for many years afterward manufacturers engaged in the export trade thought they could only sell goods by sending salesmen to exploit the merits of their products, much after the fashion of American merchants, who formerly had to do the same thing to make known the good qualities of their wares. The establishment of THE AMERICAN EXPORTER gave them a new means of communicating with probable purchasers everywhere on the face of the globe. Exporters who saw the advantage of presenting their claims to a great many persons at an expense no greater than would be involved in sending a personal representative to a solitary individual, who perhaps would not buy, if he could, early saw the advantages of the new medium of doing business. There were enough of these progressive and far-sighted men to make THE AMERICAN EXPORTER the most important journal in its field. This we do not say in the way of endeavoring to appropriate laurels, but because the two comparatively new methods of doing business seem to have attracted merchants and manufacturers in both the domestic and export trade at almost the same time.

One important result of the change in methods is that the purchaser gets the real value of his purchase. In the export trade he does not have to pay the costly bills of commercial travelers, in addition to the price charged by the manufacturers. In fact, any

purchaser on the face of the globe who buys from an advertiser in this journal need figure on no additional expense which would not be paid by a townsman of the manufacturer, except the cost of transportation. The effect of the evolution has brought the seller and purchaser, both in and out of America, so much closer together, both in trade and price, that only our foreign readers who have been in the trade for the last quarter of a century can realize the difference so far as it affects them. The net result is that American goods are better and cheaper as to intrinsic merit and price than they ever were before.

WAR AND AMERICAN DIPLOMACY.

HOSTILITIES between Japan and Russia have assumed a state of war, which condition is much to be regretted, for it has seemed all along that the troubles existing between the two nations might easily be settled by some more peaceful method than the destruction of warships and the loss of human life, with the interruption of the commerce of the two nations that is inevitable under such circumstances. At the time we write hostilities have not progressed far enough to enable us to comment upon the relative chances of the opposing nations. We are friendly to both, and are sorry to see them at war. Both nations have in their navies warships built in America. They are vessels of the highest type of naval marine architecture, and in their work at war Americans will naturally have a sentimental interest. As we write efforts are being made to secure a suspension of hostilities, but it is doubtful if they will be successful.

At this time it is interesting to recount a tribute which one of the contending diplomats recently paid to the American executive Government. Viscount Hayashi, the Japanese Minister at the Court of St. James, who bore the brunt of the diplomatic struggle in Europe between Japan and Russia, is a great admirer of American diplomacy. Discussing it, he said recently that American diplomacy was far superior to medieval methods, which still prevail with European statesmen. It is frank and always to the point the moment a controversy arises. He continued:

"American statemen make it clear what the American Government wants. Americans say frankly what they want and what they intend to have. What is the result? They generally get it. If they don't, those opposed to them know the consequences. There is no beating about the bush. There is none of the delay and suspense and consequent loss of business which invariably attends any diplomatic attempt to settle disputes with European nations.

"Take as an instance the case of the two treaty ports which China has undertaken to open. The very day after the treaty was ratified the names of the consuls appointed to the ports were announced in Washington. Yes, the old world can learn from the new to be frank and open in matters of diplomacy. Nothing do I admire more about the methods of America and its government than its diplomacy. I always know where I am when treating with an American ambassador or diplomatic representative."

The comment as to American methods made by the Viscount applies with equal force to American commercialism. American exporters sell what they have to offer for its real value, and do not beat about the bush.

IN another column we give an account of a novel educational experiment which will be tried this summer by four prominent American universities. It involves leasing an entire mine for the summer school of instruction, and the cost, \$12,000, has been provided for by an eminent American, who is sanguine of its practicability. No better way could be devised of giving the students practical education in mining, and under the auspices of the foremost universities of America there can be nothing but success. Our educational methods are certainly growing more and more intensely practical.

SIR HENRY MORTIMER DURAND, the new British Ambassador at Washington, made his first American appearance last month as an after-dinner speaker. He made a distinctly favorable impression in his expressions of solid friendship, with nothing of fulsome flattery in his utterances.

DEPARTMENTS OF COMMERCE.

THE new American Department of Commerce is making rapid progress in organizing its agencies to further the interests of our merchants engaged in the export trade. Secretary Cortelyou is singularly well-fitted to manage the department, for he is a man of wide experience, broad knowledge and of wonderful executive ability. His first annual report was briefly referred to in the last issue of *THE AMERICAN EXPORTER*. The details of the report would probably interest many of our readers, but the machinery of the Department of Commerce is so extensive that many columns would be required to give an adequate idea of the diversity and scope of the important work which is being done with marvelous system and attention to detail. The future of this department of our Government is destined to be of incalculable value to both American and international trade and commerce. These observations are called forth by an editorial which recently appeared in the *London Commercial Intelligence* concerning the agitation going on in Great Britain toward establishing a similar branch of the Government in that country. The value of such a department is appreciated in the British Empire and as long ago as last April we printed the action of the London Chamber of Commerce in respect to the movement in favor of creating a Minister of Commerce to correspond with our Secretary of Commerce. The movement in Great Britain has made slow progress, too slow to please unenvied neighbors and much too slow to please persons generally who are interested in the extension of international trade. The *Commercial Intelligence*, in the course of its comments, says things that are of universal interest:

"It is surely an anomaly that a great trading nation like the United Kingdom should divide the administration of trade and commerce between the Board of Trade, the Foreign Office and the Home Office. 'This cumbrous system,' writes a leading parliamentary authority, 'ought to be done away with and the great interests of commerce intrusted to the care and responsibility of one department, with a staff solely for that purpose and acting, where necessary, with the Foreign Office.' At the head of this department should be a minister endowed with the highest Cabinet rank, who should have the assistance of a permanent board of advisory officials, each an expert in the various subdepartments, which should constitute the ministry. Most of the present departments of the Board of Trade should hold their place in this reorganized office. The commercial department and the Foreign Office should merge in it, and the consular service should be administered by the Minister of Commerce. There can be little doubt that such an arrangement as this would serve the best interests of the country and insure our trade and commerce that attention from the Government which it is now denied.

"It is sufficient to glance at some of the anomalies and disabilities which press most hardly on our business men to see how strong a case there is for immediate reform. Much of the merchant shipping legislation is obsolete. In spite of recent amendments, our patent laws are in a most unsatisfactory condition and afford a striking contrast to similar legislation in the United States. Our consuls, despite the fact that some of them at least are earnest and thorough, do not command the confidence of business men. Moreover, our consuls do not have a fair chance to do themselves justice. Their reports, often belated enough before they reach this country, have then to filter through the Foreign Office and the Board of Trade before they reach the British merchant, whose interest in the matters with which they deal has often entirely vanished long before these documents reach him.

"We ought to have a thoroughly efficient system under which British consuls and commercial attachés throughout the world could send their 'news'—while it is news—straight to the British trader at home, something after the fashion that is adopted in the United States. No one who has studied the question can doubt that our railway and canal systems, charges, etc., are in need of thorough reform. The Board of Trade as at present constituted has altogether insufficient powers to safeguard the interests of traders. It is little short of a scandal and a disgrace that a com-

mercial nation should be content to have at the head of its Board of Trade a gentleman who, however estimable in his private capacity, has absolutely no business training or other qualifications fitting him to occupy that very important position. We need a minister of commerce, and if the Prime Minister should create this office and appoint to it a thoroughly efficient statesman he would do much to restore confidence among business men in an administration that has so far been marked chiefly by its capacity for muddling and mismanagement."

It is a noteworthy fact that the American Government has already in operation precisely the system advised by our contemporary. As we said last April, we will watch the outcome of the movement in the United Kingdom with great interest, as will also nearly every reader of this journal.

NORTH AMERICAN CONTINENT.

ELOQUENT and pregnant words are contained in an able article written by Mr. John Charlton, M.P., of Canada, which was printed in the last issue of the *North American Review*. He says:

"In the future the relations of Canada with the United States will have much influence upon the relations of the United States and Great Britain. Under some circumstances, this influence may be a paramount one. With the question of better trade and political relations with the United States are bound up influences that will in a marked degree influence the future of the English-speaking race upon the North American Continent. It is not the present or the immediate future alone that demands consideration. The day will come when 400,000,000 people who speak the English tongue will occupy the 7,000,000 square miles which the Anglo-Saxon now possesses in America. Shall this great future be one of harmony, where justice, truth, good-will and mutually advantageous relations shall prevail? Heaven grant that it may; and let all thoughtful, well-meaning men in the two countries realize that the words and actions of Canadian and American jingoes are not in the interests of the future myriads for whom we are now laying down the lines."

We have referred several times recently to the future of Canada and have discussed its hopes and prospects from various points of view. The dividing line drawn between the two countries does seem to be an arbitrary one from many points of view, commercially and politically, but neither the peoples of the two countries nor the conditions are yet ripe for a unification such as our Canadian friend suggests. As for peace, Mr. Charlton may be sure that the two countries will have it at any cost, so to say.

WAR'S effects on Russians are not limited to torpedoes and other projectiles. The tea trade is cut off and Siberians, who have been large buyers of Japanese tea, will have to use some other beverage for a time. At Vladivostock, our commercial agent, Mr. Greener, reports the annual trade to have been about 500,000 boxes of green and black tea, ranging from \$12.87 to \$14.93 per box.

SOME of our contemporaries have just discovered that work on the Panama Canal has been kept up uninterruptedly under the auspices of the United States Government, regardless of treaty troubles. The fact was printed in *THE AMERICAN EXPORTER* as long ago as last May.

CUBA has been left now entirely to the Cubans. On February 4th the last vestige of American occupation disappeared, when the last battalion of United States soldiers sailed for home. Thus has our Government kept full faith with the inhabitants of the island republic.

THE *Furniture Trade Review* calls attention to the fact that British Africa has recently doubled her purchases of American furniture. The residents of that section of the globe have shown other evidence of appreciating good American goods at reasonable prices.

THE annual dinners of the Pilgrims' Clubs simultaneously in New York and London are becoming more interesting every year, typifying, as they do, the closer and more friendly relations between the two great English-speaking nations.

GAS TURBINES NEXT.

Experiments with Steam Inspire Inventors to Further Invade the Field.

MUCH has been printed about the marvels to be accomplished by the steam turbine. The next step in turbine advancement seems destined to be in connection with gas engines. A gentleman who recently received an advanced degree at a Western university in virtue of a very thorough investigation on the subject of the gas turbine is now in the employ of a large electric company, and the inference is that he will have at his disposal the extensive facilities of this company for conducting experiments that may eventually lead to a successful gas turbine. This gentleman is Sanford A. Moss, who has made a special study of the subject of gas turbines since 1898. He received the degree of master of science at the University of California, U. S. A., and has also studied at Cornell University, specializing upon the same subject—that of the gas turbine.

The great thermodynamic advantage claimed for the steam turbine over the steam reciprocating engine is that there is no condensation and reevaporation through contact with metal surfaces which are alternately heated and cooled. The only condensation in a steam turbine to amount to anything comes from the conversion of the energy of the steam into work. In the gas turbine there is, of course, no condensation to enter into the question, but there is an opportunity for another and more important gain through the abolition of the water jacket. A writer in *Machinery* declares that it is a singular fact that the turbine is theoretically and probably practically capable of effecting a saving over the reciprocating engine, whether used with steam or with heated air, but because of entirely different reasons in each case.

It is well known that the efficiency of the gas engine depends mainly upon the degree of compression pressure attained in the working fluid. When operating upon the Otto cycle the gas and air are compressed to as great a pressure as practicable, and then are exploded, giving a still higher pressure. This same process can be employed in connection with a gas turbine and has been advocated for that purpose. Under this plan the air and gas would be compressed and exploded in a chamber lined with refractory material, and would then discharge through a diverting nozzle and impinge against the blades of a turbine wheel, as in the case of the De Laval steam turbine. The diverging nozzle would act as an expansion nozzle, to reduce the pressure of the gases to atmospheric pressure and convert their potential energy into kinetic energy before doing work upon the wheel. The discharge would occur in puffs, an impulse being given as often as an explosion occurred.

Another method of accomplishing the result would be to have the combustion element burn continuously in contact with compressed air in a refractory chamber from which the heated air would discharge continuously through the expansion nozzle. The pressure in the chamber would remain constant under such conditions and the question of efficiency of the apparatus would depend solely upon the pressure that was attained through compression, as the relative amount of work done in an engine working upon this cycle does not depend upon the temperature of combustion. The efficiency of this cycle is not as high as that of the Otto cycle, but for turbine purposes would have the merit of giving continuous discharge through the nozzle instead of intermittent discharge. This plan of compression and then heating under constant pressure was employed in a petroleum engine, which was one of the pioneers in the gas engine field.

The perfection of the gas turbine will not be an easy proposition. It will either have to be accomplished by individuals, working in a haphazard way through a long period of years, or by the concentrated efforts of some large firm, says *Machinery*. The latter plan will undoubtedly result in the quicker solution of the problem. One of the problems will be that of the temperature of the gas and its effect upon the metal of the turbine wheel. While the hot air will not come in contact with any of the bearings of the wheel it is evident that the blades might not stand up to their work if subjected to a very high temperature. The fact that all bearings and wearing surfaces, however, would be removed from contact with the hot gases would undoubtedly make the water jacket unnecessary.

Locomotives While You Wait, in America.

A WRITER in the *Booklovers' Magazine* tells the following interesting story of American promptness: "There is a very good story told of a British master mechanic, who was sent over to buy some American locomotives because the home shop could not get them out in time. He was courteously received at Baldwin's, where locomotives had been built for nearly every railway in the world except those in England. The Briton was in haste. Time was to be an element of any contract; the quicker the better and a big premium for haste. The partners reflected that there were some locomotives under way, which the visitor had already seen and wished duplicated, and that the Americans who had ordered them would be willing to waive claims, seeing that others could be completed for them on time. The Briton became impatient for a definite statement as to the time when delivery aboard ship would commence. Finally one of the partners remarked: 'We are very anxious to oblige you in every possible way, and will hasten the work, but we cannot perform miracles. The best we can do is to begin deliveries one week from tomorrow.' The Briton fell in a dead faint.

"The following equally good story the firm vouches for: 'When General Kitchener was fighting his way southward, inch by inch, into the Soudan, his

chief problem was that of transportation. To solve this he constructed the famous strategic railway. All the material was promptly available in Great Britain except the locomotives and bridges. To construct these English builders wanted so much time that it would have disturbed his whole plan of campaign. Philadelphians built the Atbara bridge as if by magic, and to Philadelphia he sent for locomotives. The Baldwins undertook to do the work in twelve weeks, a considerably less number than the months required by British bidders, and were offered a handsome bonus for any gain in time. The War Department cabled from London one fine morning that an inspector had sailed that day to watch the construction. The reply was sent that they were already completed, thirty-seven days ahead of time. Ten days later the astonished inspector walked in to find his trip had caused an unnecessary delay in delivery. The firm used the bonus for anticipated delivery in sending one of its bright young men with the locomotives to superintend their erection, and to watch carefully their initial operation."

This Is the Biggest Pump in the World.

IN the United States there is a pump in daily use which, without being crowded to the limit of its capacity, can deliver 2,500,000 gallons of water every hour in the twenty-four. Moreover, it does the work without making as much noise as is made by the operation of the old-style sewing-machine. Outside the doors of the great building which houses it no sound is heard from within, and, standing beside the monster upon the brink of the pit connected with the lake from which the water is taken, almost the only sound is the noise of the suction, as with every stroke more than a thousand gallons are lifted.

It is a triple-expansion pumping-engine, with a capacity of 60,000,000 gallons, standing nearly 50 feet in height, and requiring 1,500 horse-power for its operation. It has been proved by actual test that the nominal capacity can be easily maintained for an indefinite time without injury or strain, and that pushed to its full capacity the pump could handle approximately 75,000,000 gallons in twenty-four consecutive hours. The duty of the pump is to furnish water for the great stamp mills of the Calumet & Hecla Company, which has twenty-two steam pumps in continuous operation, daily pulverizing 5,000 tons of conglomerate rock into sand so fine that it can be carried away by a stream of swiftly running water.

The pump is housed in a special building near the shore of the lake, and it forces a steady stream of water to the upper portions of the mill, where innumerable small jets of water play upon the great slime tables and jigs. Here the specific gravity of the fine particles of copper contained in the rock separates the mineral from the worthless sand, and the size and force of the streams of water are so nicely regulated as to wash away the sand and yet carry with it the minimum of copper.

Coal Mined by Machines in America.

CHARACTERISTIC of the age in which we live is the growing use of mine machines in the bituminous coal mines of the United States. The report of Edward W. Parker on the production of coal in 1902, which forms part of the annual volume of mineral resources just published by the United States Geological Survey, shows that 5,418 machines were employed in 1902, as against 2,622 in 1898. In a few of the States there was a decided decrease in the number of machines used, but with the exception of Wyoming these were States in which comparatively little development in the mechanical production of coal has been made. All of the States where the use of machines had exerted any significant effect upon the production prior to 1902 showed substantial increase in that year.

The total machine-mined product reported for 1902 was 69,611,582 short tons, an increase, as compared with 57,843,335 short tons in 1901, of 11,768,247 short tons, or 20 per cent. As the total production of bituminous coal in the United States in 1902 was 15 per cent. larger than in 1901, it will be seen that, on the whole, the production by the use of machines more than kept pace with the increased output. In fact, the percentage of the machine-mined product to the total output has increased from 25.68 in 1901 to 26.09 in 1902.

Improvement in Cigar Manufacture.

AMERICAN cigar manufacturers are adopting the latest and most improved methods of conducting their business. Cigars, as everybody knows, are affected by temperature and climatic conditions after they are ready for sale, but in their manufacture the condition of the atmosphere within the building is also of vital importance. The air must be kept moist and at a constant warm temperature, both in the winter and summer season. It has been found that for maintaining an even, moist and warm temperature the fan system is peculiarly adaptable, because the quantity and quality of the air is under absolute control, and may be varied at will. Fresh air is drawn from outside the building by means of a fan, is circulated through a moistening chamber, and, in the winter season, between coils of steam pipes inclosed in a fireproof steel-plate jacket, and delivered under pressure to the work-rooms, through distributing ducts. The expense of operating is very low, as no heat is wasted. The idea has been adopted recently by some of the most prominent American cigar manufacturers, and its success has been assured by their experience.

TREATY WITH ABYSSINIA.

Complete Commercial Success of the American Invasion of Emperor Menelik's Domain.

WE learn by news advices from Jubutit, Somaliland, that the United States expedition to Abyssinia, under Consul-General Skinner, of Mar-seilles, which arrived at Adis Abeba, December 21st, has since successfully carried out the principal features of the mission, which has been described in previous issues of THE AMERICAN EXPORTER. A treaty between the United States and the Empire of Ethiopia, opening for the first time friendly commercial relations, has been negotiated and signed. Emperor Menelik has also given his formal acceptance of the invitation to participate in the St. Louis Exposition. As a personal tribute from Emperor Menelik to President Roosevelt, Mr. Skinner has been charged to deliver to the President two lions and a pair of elephant tusks. Each member of the American party was tendered a decoration, the acceptance of which is held in abeyance, owing to the official character of the expedition. The closing audience granted by Emperor Menelik to Mr. Skinner and the leaders of the American escort was of a particularly cordial character.

William H. Ellis, of New York, who went over to visit Menelik II, of Abyssinia, returned on the steamship Majestic last month. He declared that the Emperor received him kindly, and said that of all the nations he welcomed America the most heartily, because he felt that Americans did not come to seek a part of his territory. Menelik received Mr. Ellis in his capital, Adis Abeba, and allotted him quarters in the royal palace. Mr. Ellis arrived with an escort of 200 men, and on leaving the country carried with him three letters from the Emperor. One was to President Roosevelt, one to Andrew Carnegie, thanking him for what he had done for the negro, and one to Mr. Ellis himself for the American people. Said Mr. Ellis:

"I am delighted with my visit. I found Menelik conversant with European affairs, and that he was eager for information regarding America and its development. He was especially interested in the colored race.

"He is about 58 years of age, light of color and of Anglo-Saxon features. He claims to be a direct descendant of the Queen of Sheba."

Canada's Trade Relations with United States.

FIGURES just made available throw interesting light on the trade between the United States and Canada. It appears that 52 per cent. of Canada's total foreign trade is with the United States. But the balance of trade is largely against Canada, for whereas 80 per cent. of all imports during 1903 came from the United States, Canada finds a market south of the line barely 31 per cent. of her total export. Nor under existing tariff conditions is this proportion likely to vary to any appreciable degree in the future. According to a Canadian authority, imports of United States products for Canadian consumption amounted during the fiscal year 1903 to \$128,795,237, an increase of \$14,047,135. Exports to the United States totaled \$67,766,362, an increase of \$1,199,527.

The Canadian authority discusses the situation in detail and concludes as follows: "Conditions, present and prospective, are therefore altogether favorable to an increased trade with the United States during 1904. That there may be a reduction in values is quite possible, but there is every indication that the volume of interchange will be greatly increased. This is certainly the outlook as regards imports. Canada should be a good customer for the next twelve months at least. The proceeds of the excellent harvest of 1903 are circulating freely; large outlays for the construction of railways, canals and other public works are assured."

Ready-Made American Cottages in Demand.

K. KENNEDY, United States Consul at Para, Brazil, makes an interesting report showing the appreciation of American manufactures in his district. In his report he says: "Within the past ninety days a large number of ready-made cottages reached this port from New York, and I am informed that many more of them are on the way. These will be erected on ranches and rubber estates, and if they prove satisfactory a very large demand for them will be immediately created. American vapor and kerosene launches are rapidly winning favor here. An order for ten small launches goes forward by the steamer which bears this report.

"American icemaking machinery has a complete monopoly of the Amazon from Iquitos, Peru, to Para—3,500 miles—and the business is a very important and lucrative one in this burning climate."

Growth and Future of Our Mexican Trade.

IMPORTS of iron and steel are the largest items of Mexican trade with the United States, and they increased most decidedly in the decade 1892-1902, is the report of James A. LeRoy, United States Consul at Durango, Mexico. Machinery alone jumped from \$1,500,000 in 1892 to over \$7,000,000 in 1903. Sales in these lines, responding to Mexico's industrial development, will likely continue to increase, but it may be doubted if they will gain relatively as they have in the past ten years.

"It will not do," Consul LeRoy adds, "to overlook the establishment of such concerns as the Mexican iron and steel plant near the 'iron mountain' at Durango, the very large, new steel plant at Monterey and the smelters at

Torreón and elsewhere. It is inevitable that a country waking to life as Mexico is should both learn from us and turn our conditions to her own advantage. The establishment of industrial concerns, such as cotton mills, shoe factories, etc., goes along with and stimulates an economic and social advancement and increases the call upon the United States for machinery, but the internal advancement in its turn leads the country, lately dependent on the outside world for more highly finished products, to seek to become again in a different degree independent and self-supporting."

Exporters in the Big Baltimore Fire.

BALTIMORE city's big fire last month affected some of the advertisers of THE AMERICAN EXPORTER. John B. Adt was one of those who fortunately escaped any damage. His stores and plant were left intact, and, of course, the filling of orders was uninterrupted, except for the day of the fire. Of others the Baltimore Badge and Novelty Company, the J. F. W. Dorman Company and the Delaware Oil, Gas and Development Company lost their plants through being in the path of the fire. The Baltimore Badge and Novelty Company was particularly unfortunate, as its plant had been destroyed by fire only a few weeks before by the big conflagration which leveled most of the business section of the city and had just been able to effectively resume business in temporary quarters. With characteristic enterprise all of these concerns began making arrangements for the resumption of business before the fire had subsided, and our foreign readers will be interested to know that any delays that may occur in filling their orders will be very slight comparatively. In fact, by the time this issue reaches our readers there will be no occasion for delay, for the enterprising managers of the concerns mentioned established temporary, but workable, quarters without the slightest bit of delay. It is pleasing to have on our list of advertisers men of such prompt action and indomitable spirit, for the Baltimore fire was a catastrophe which brought those qualities into effective service and our patrons were men equal to the emergency.

American Palace Railway Cars in Bavaria.

ACCORDING to a report from James H. Worman, United States Consul-General at Munich, Germany, the Bavarian Railway has just completed an American palace railway carriage from material imported for this purpose two years ago from the Pullman factories in Pullman, Ill. He adds: "This is the first railway car of the kind to be introduced into Germany and will no doubt be the forerunner of a regular system of luxurious railway carriages of this kind on German railways. The progressive character of the Bavarian Railway management is well known not only in this country, but in the United States. The chief of the bureau of railway management, General Director von Ebermayer, has visited the United States and is in thorough touch with American railway enterprises. The new minister of railways took office on January 1, 1904, in the department of railways, under the management of a separate minister, Minister von Frauendorfer, a man of like energy and enterprise, and there is reason to look for a larger introduction of American locomotives and palace cars."

Fostering International Trade.—"There is no country in the world which has so many trade journals as Germany," writes United States Commercial Agent Ernest L. Harris, Eibenstock, Germany. "The trade journal is a powerful organ for bringing producer and consumer and wholesaler and retailer together. What the trade journal accomplishes for the interstate commerce of any one country, certain journals now in circulation are accomplishing for international commerce. The American trade journals on file in the various consulates, chambers of commerce and other merchant organizations in Europe are unquestionably furthering the interests of our export trade. The advertisements in them may not always produce business at the outset, but they lead to inquiries along certain lines of manufacture which, if carefully answered, lead to the desired trade openings abroad."

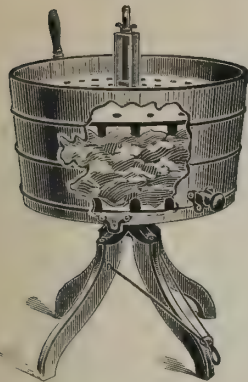
Brooders and Incubators.—The Reliable Incubator and Brooder Company, of Quincy, Ill., U. S. A., recently issued its twentieth annual catalogue, which, as usual, is very complete with descriptions and illustrations of its incubators, brooders and poultry breeders' supplies of every description. Besides these, it contains much valuable information on subjects of great interest to all who raise poultry. It gives to breeders practical pointers, that would take years of experience to acquire. The company wishes each of our readers to have a copy, and will be pleased to send it free to those who will send their name and address, mentioning this paper when writing.

American Meat a German Necessity.—Simon W. Hanauer, deputy consul-general at Frankfurt, Germany, calls attention to a recent report of the Berlin Chamber of Commerce, which says in part: "Nothing can take the place of American bacon as a cheap and nutritious article of food for the masses of our population. Therefore it would be a matter of deep regret if the high import duties of the new tariff law were not reduced to a reasonable degree."

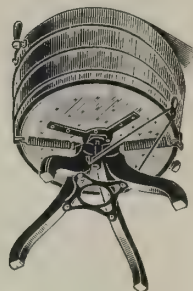
American Farm Implements for Austria.—American farm machinery does not find a ready sale here, but I am satisfied that many of our farm and garden tools could be successfully introduced if systematic efforts were made by our manufacturers to bring them to the general attention of Austrian farmers and gardeners.—FRANK W. HOSSFELD, United States Consul, Trieste, Austria.

"1900" Washing Machine

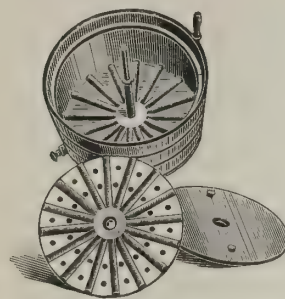
AND ITS PARTS.



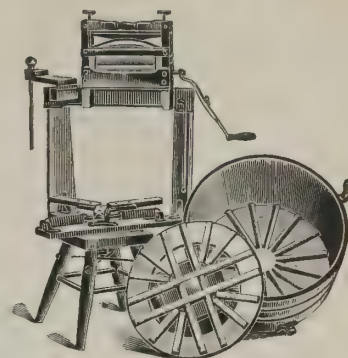
Interior view, showing clothes in process of washing.



Looking under Bottom of Washer.



Inside view of Tub and Bottom of Agitator.



Shows Washer with the tub removed from the frame and the agitator or disk which rests on the clothes and water during washing. It also shows the wringer in position as when in use.



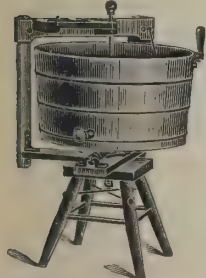
"1900" Washer.



"Domestic" Washer.



"Home" Washer.



"1900 Junior" Washer.



"1900" Washer.

A Remarkable Record!!! Reward of Merit!!!

Commencing in the year 1900 to manufacture the "1900" Washing Machine, we at that time "turned out" an average of Five Washers per day. During the month of August, 1903, we manufactured and sold OVER FOUR HUNDRED Washers per day.

A Remarkable Record!!! Reward of Merit!!!

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-one years' practical experience in the making of washing machines, and, unlike any other washer upon the market, do not tear and wear the garment, but by the adoption of our agitator tosses and tumbles the garment through a whirlpool of water, thus forcing the water through the finest or coarsest fabrics, causing the clothes to become ABSOLUTELY CLEAN, without boiling or scrubbing, without wear or tear, and without the use of chemicals.



"1900" Washer.



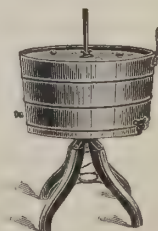
"Domestic" Washer.



"Home" Washer.

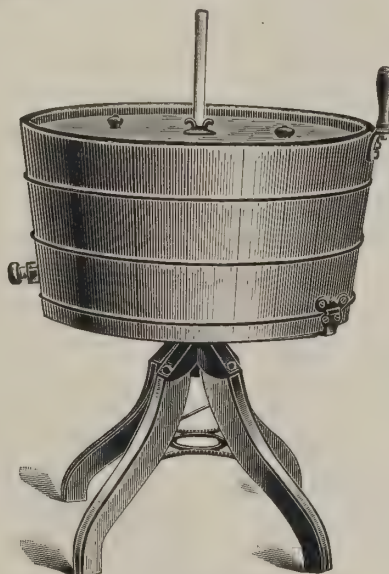


"1900 Junior" Washer.



"1900" Washer.

"1900"
Ball-Bearing
Washing
Machines.



THE "1900" WASHING MACHINE.
Complete, Ready for Use.

"1900"
Ball-Bearing
Washing
Machines.

Special Offer for Foreign Markets Only:

\$22.75

Upon receipt of Twenty-two Dollars and Seventy-five Cents in U. S. gold, or its equivalent, we will box, ready for steamer, and deliver F. O. B. cars at New York City, One of Each (Four in All), "1900," "1900 Junior," "Domestic" and "Home" "1900" BALL-BEARING WASHING MACHINES. Weight of the four machines, boxed, 340 pounds.

To facilitate our increasing export trade we desire to communicate with one responsible business house in each trade center of the world.

Tens of thousands of the "1900" Washing Machines have been sold in the United States, as well as in all parts of the world. Many of our agents at home are making over \$200 per month. Live men in your vicinity can do as well.

Orders received direct or through export houses; when ordering through the latter, to avoid errors, please mail us a duplicate of order. Our Illustrated Catalogue mailed postpaid.

The "1900" WASHER COMPANY
BINGHAMTON · NEW YORK · U.S.A.

ELECTRIC BURGLAR ALARMS.

Perfection in Dealing with Unwelcome Intruders Exemplified by an American.

ONE of the rich men of America is Giovanni P. Morosini, a thorough American, who believes in utilizing the inventions of the age to the fullest extent. Mr. Morosini does not fear burglars; in fact, he does not lock the doors of his mansion at night, although he lives on an estate far enough from New York City so that there is not a policeman on guard in front of or near domicile. Mr. Morosini, who is a retired banker, lives in quite an isolated locality on the bank of a great river, and he is sufficiently wealthy to tempt burglars to pay him a visit. Some account of the experiences and fate of such an intruder is interesting as showing the practical operation of devices which Americans have put into use. Presuming the burglar, says the *New York World*, pursuing the usual plan of "piping the lay" in the daytime, sees on the side fronting the Hudson River huge cannon and gaping mortars protecting Mr. Morosini's villa. What of it? They're all loaded, sure enough, and to the muzzle, at that—but with ice. They are magnificent ornaments and fine war relics, but of a type so obsolete as to put "the man behind the gun" in as great or greater danger than the man at the end that yawns. They are as formidable as cast-iron lions and papier-mâché dogs that guard some terraces.

"Easy," comments the burglar, as he surveys the big, spread-out mansion, with its coach-house and conservatories remote in case of alarm. "All windows and doors," he adds, gleefully. "Get in any old place." He may see a brick building at the rear of the grounds, but it looks a great deal like an ice-house, a toolhouse or a laundry. If he only knew it, that's the place that contains his undoing.

One of the side doors under the sheltering shadow of the massive porte-cochère is selected by the cracksmen as an ideal point of entry. Nothing better, for, from the lay of things, it leads into the big entrance hall, and there is no need of passing any rooms likely to be occupied. Then there is the great dining-room handy, with its heavy and valuable silver, the library just as easy of access, with its curios and relics, and the drawing-room, full of priceless ivories and bric-à-brac. Mr. Burglar gets to the door under the porte-cochère in fine style and on just the right kind of a night. It would be a shame to use a jimmy on such a fine bit of oak and plate glass as that vestibule door, so he tries the knob gently. It yields to his surprised touch; the door opens inward. Right here more senses than touch are treated to a jolt of amazement. As the door swings in every electric light in the halls and principal rooms of the mansion bursts into light and the interior of the house is illuminated as if for a grand fête. At the same time the lights about the grounds flare into all too prominent existence. Also, far up on the roof a huge brazen clangor arises that is fit to awaken the neighborhood for a mile around. It sounds for all the world like the self-proclamation of a locomotive bell on a very important train bustling into a big terminal. With the best reason, too, for it is a locomotive bell, hung hidden between two great chimneys, and it will keep on ringing until somebody throttles its clamor by turning a switch.

If Mr. Burglar is a sprinter, he will take a chance on a hot-foot dash through the hedge and a toboggan down the hill that sweeps around to the station platform. If he lingers he will find himself at the wrong side of a busy party of skirmishers, with very able and accurate guns ready for business. The same swing of the door that made things all light, but not merry, has jangled news of his arrival into the butler's quarters, and to the coach-house, where the stable hands sleep, and the greenhouse, where the gardeners were aroused from their slumbers.

It would have been just the same if the burglar had elected to become a guest of the Morosinis by forcing a window. He would have broken an electric circuit that would turn on the illumination display and set the bells ringing, quite as readily and as disastrously. Or, if he had, with the cunning of his craft, tried to avoid burglar-alarm electric connections by the well-known method of cutting through the glass it would have amounted to the same thing. The windows are of the cathedral type, with small panes, heavily leaded. But in the leads are secreted fine wires full of electricity. He couldn't make an aperture big enough to enter without cutting across a lead and thus severing a wire.

It has cost Mr. Morosini a lot of money, time and thought to make such ample provision for the elaborate welcoming of cracksmen. For instance, there's the heart of the whole system, the red brick, one-story building that might be a laundry, but isn't, because it's a power-house, with a remarkably fine installation of electricity. This power-house is an essential at Mr. Morosini's suburban estate, but in the cities the necessary electric power is supplied for those who use such alarms by the public light companies. The latest improved systems are so constructed that even electrical experts cannot tamper with them without giving the alarms. Nothing short of blowing up the power-house with dynamite would put the service out of business, and that incident would put the alarm in operation and enable persons affected to provide other and temporary means for protection until the system could be put in effective operation once more.

American Auto-Boat for Kaiser.—It was learned authoritatively last month that a new automobile boat for the German Emperor, designed by Charles F. Herreshoff, will be built in America.

Newspaper's New Building an Electric Marvel.

THE growth of the newspapers of a country bears a close relation to the general prosperity of that country, and in the case of the *New York Times* it has become necessary for its owners to erect a vast new building. When finished, the structure will be next to the tallest in New York, measuring 440 feet in height from the base of the steel-work. Aside from its great height it will present many novelties. In fact, it will be an electric marvel. It will combine a greater number and a greater variety of uses for electricity than any other structure. Steam will be an unknown quantity in the building for the greater part of the year, as it will be used only for heating purposes, and at a pressure of less than five pounds. The dust brush and the traditional broom of the office sweeper will be banished. New ideas, new methods, will prevail. These unique features are incidents that were evolved in the solution of a difficult problem.

Electric power will be furnished from a public station outside of the building, saving a great area of space and effecting economy of operation. This outside electrical supply will furnish power for 109 motors, rated at 900 horsepower, light for 4,000 incandescent lamps, 15 arc lights, 1 searchlight, signs, bulletins, Cooper Hewitt lamps and for many novelties, aggregating the use of current amounting to more than 400,000 kilowatt hours per annum.

Electrical novelties will be found in unlooked-for places. The presses will be equipped with the Kohler system of control, which permits of a movement delicate enough to turn the printing cylinder one-eighth of an inch per second, or at a speed of four revolutions per second. The automatic control and stoppage of machinery extends through the presses, autoplates, house pumps, sewage pumps, air vacuum pumps and the air-compression pumps, in order that current may not be wasted.

The barber shop promises innovations that are sanitary and satisfying. Some of the latest shops have appliances for using what is practically a blow-pipe on the hair, scattering fine particles into the surrounding air. The vacuum system completely reverses that idea, providing treatment that is most pleasing and decidedly sanitary. Instead of brushes for clothing, hats and shoes, the suction arrangement promptly and effectively removes all dust from clothing and sends it with all dust from the building into a receptacle that will be collected once a day. The woman who scrubs the floors will abandon mops and remove all the soapy or rinsing water by the suction of a pipe which has an opening eight inches long and one-sixteenth of an inch in width.

Apart from the dust and noise and annoyance of present methods, there is a material saving to carpets and furnishings, all of which are aerated as well as cleaned. The particles of dust and disease germs that would otherwise float and fill the air disappear in the tube, and a service which has hygienic as well as commercial value is rendered. The newspaper equipment—linotypes, presses, type cases, desks and furniture—will be dusted and cleaned by this system, which will do away with brooms, brushes, pails and dirty water.

This Light Comes from Mercury and Electricity.

FROM Rotterdam comes a request for information about the Cooper-Hewitt lamp, which has previously been described and mentioned otherwise in these columns. The lamp may be said to be something between an arc and an incandescent arrangement, although literally it is mercurial vapor made luminous. A glass tube of, say, two inches diameter and four feet in length, although it may be of any size within limits, with a ball blown on one end. Wires are fused into top and bottom, and in the lower end is placed a quantity of mercury. The current converts a portion of the mercury into vapor, which rises in a luminous stream to the bulb at the top; where it is condensed and falls back to the bottom. This continues as long as the current passes, and as there is no destruction of the mercury, the lamp should have a long life, although just how long remains to be seen.

The light includes only the two lower rays of the spectrum, the blue violet and the green; hence not only is there an absence of everything red, but also a reversal of every shade into which red enters. Visually, of course, this is a serious objection to the general use of the mercurial vapor lamp, nor can it come into anything like general use until a method is found to supply the lacking ray. One of the methods to supply the lacking red is to run some red incandescent lamps in connection with the Hewitt lamps. Photographically, however, the red is not missed, as, although even the ordinary plate is to a certain extent sensitive to it, it is so slightly as not to take any part in the exposure of portraiture.

New Combination in Packing.—The Smooth-On Manufacturing Company, Jersey City, U. S. A., has issued a new booklet, describing the various applications of its compounds, including a new one that will be of interest to those concerned. The booklet will be sent free to readers of *THE AMERICAN EXPORTER* on application to the company.

British Collieries to Use American Machinery.—Two important British collieries are to be equipped with American electrical machinery. The Ashington Coal Company has ordered a motor generating set. The Blaensychan colliery, located in the vicinity of Pontzpool, Wales, is to be installed with generating equipment.

ESTABLISHED 1866.

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CLEVELAND, OHIO, U. S. A.

F. R. PATCH MFG. CO.,
Stone-Working Machinery.

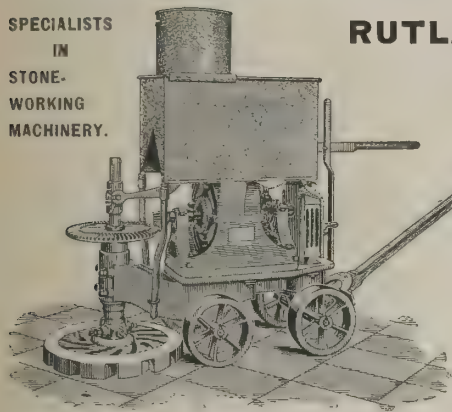
SPECIALISTS
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RUTLAND, VT., U. S. A.

MANUFACTURERS OF

DRILLS,

Planers, Circular and
Straight;
Polishing Machines,
Rubbing Beds,
Gang Saws, Derricks,
Traveling Cranes.



Patch Electric Floor Surfer and Polisher.

The Patch Electric Floor Surfer and Polisher is a device to dispense with the labor usually employed in dragging heavy weights over tile and mosaic floors to produce an even surface. It is also serviceable for polishing large granite and marble surfaces, and sanding wooden floors. The motor is 2-horsepower, and will be furnished any voltage required. The voltage required should be particularly mentioned when ordering. The surface wheel is 20 inches in diameter. The sand box and water tank are conveniently located, supplying either sand or water as desired. The truck wheels have a heavy rubber tire, thus preventing marring the surface. The machine is shipped ready for immediate use. Gross weight, crated, 900 pounds. Net weight, 800 pounds.

We want YOU to test the CROSS OIL
FILTER. We guarantee it to save ONE-
HALF YOUR OIL MONEY.



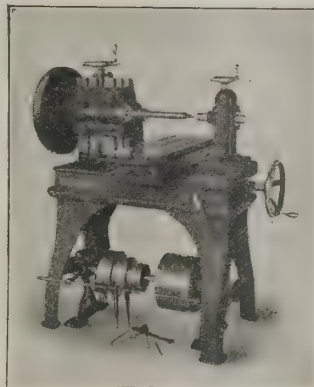
"We would not be without the Cross Oil Filters."
THE CUMMER LUMBER CO.,
Jacksonville, Fla.

Do it now. Write us and we
will send you a CROSS OIL
FILTER on thirty days' trial.
If unsatisfactory, return at our
expense.

BURT MFG. CO., 217 Main Street,
Arkon, Ohio, U. S. A.
Largest Manufacturers of OIL FILTERS in the World.

Becker-Brainard

New Model No. 7 Plain

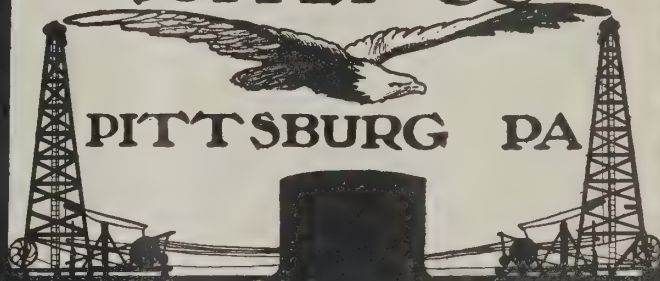
HORIZONTAL MILLING MACHINE,

a powerful miller for
general manufactur-
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**AUTOMOBILES, GUNS,
ELECTRICAL WORK,
BICYCLES, TYPEWRITERS,
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Becker-Brainard Milling Machine Co.,
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MANUFACTURERS OF

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**OIL AND GAS
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**Derricks and Rig Irons,
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A DOUBLE ANNIVERSARY.

Edison Tells About the Birth of the Incandescent Light Twenty-Five Years Ago.

ONE of the most interesting events in America last month was the double anniversary which was celebrated by Thomas A. Edison, under the auspices of the American Institute of Electrical Engineers, at a dinner at one of the great hotels in New York City. Mr. Edison celebrated both the fifty-seventh anniversary of his birth and the twenty-fifth anniversary of the day on which he gave to the world the incandescent electric lamp. At the banquet he was praised by the best electrical experts of the United States, while messages of eulogy came to him from the savants of the Old World, until he hung his modest head and only consented to utter his thanks at last by ticking them over one of his beloved telegraph wires. After such distinction perhaps only a man of Edison's energy and perseverance or of his thorough absorption in the work that has engrossed his whole life and blossomed with such notable accomplishment could have been found early next morning toiling as usual in his laboratory.

In the quietude of a little New Jersey village he was found by a New York *Herald* reporter sitting amid his jars and wires and kettles experimenting on new wonders. He is always reluctant to celebrate himself, and it was only when he had been convinced that the world was entitled to know the beginning and development of the invention for which he was honored on Thursday night that he consented to talk.

The narration was almost as marvelous as the achievement it described, and it contained matter never before made known to the world, or, if made known at all, only to a few experts. Its interest is enhanced by the fact that the finished article from his hands is now in use in every country of the world.

"Singularity enough," said Mr. Edison, "one of the first establishments in the world to adopt the incandescent lamp was the *Herald* Building in New York. As soon as its practicability had been demonstrated a complete plant was installed. Again, the *Jeannette*, which the *Herald* sent on an exploring expedition to the North Pole and which was lost in the Arctic regions, was also equipped with the new lamp, and somewhere in the icy depths where she reposes perhaps she still illumines the waters of the deep."

Then he told the story that sounds like fairy lore, or would sound like it had not mankind become used to the necromancy worked by the quiet, white-haired man who sits in the seclusion of the Jersey wilds, day after day, from early morning until after midnight, experimenting with the currents that in less familiar hands would be deadly.

Before launching into it, however, he was asked if he was now at work on any new inventions.

"Lots of 'em," he answered in his laconic fashion.

"Won't you let the world know what more it is to expect from you?"

"Nope," he said, in the same manner, "except for the storage battery I'm trying to perfect, and that's pretty well known."

"That is the one you design for use in automobiles?"

"Yes. The present one is of no use at all. It doesn't last more than eight months or so. I'm trying to get up something that will take the place of horses everywhere."

"Will it be more expensive than the one now in use?"

"Well, in the beginning it might be a little more expensive, but what's the difference, when the present system is no good, and this one, after it is perfected, will pull more tons for less money?"

"What do you think is the future of wireless telegraphy, if it has one?" was the next question.

"Certainly it has a future, and I think Marconi will do great things with it. We no longer consider it strange that ships should talk to one another from distances of six or seven hundred miles, and, as a matter of fact, wireless telegraphy is now being used all over the world. But its immense value will not be fully demonstrated until it has come fully into commercial use, and Marconi's first aim, to the exclusion of everything else, should be to get his producing stations open and in working order.

"By the way," continued Mr. Edison, breaking off as though loath to talk of the things with which he was most familiar, "talking about the other side of the world, I see that the Japanese are doing great things. Well, they are great fellows. I used to have a lot of them working for me here. They're energetic, inventive and experimental—that explains their success against Russia."

Edison's electric light, incredible as it may appear, is produced from a little piece of paper—a tiny slip of paper that a breath would blow it away. Through this little slip of paper is passed an electric current and the result is that light now so carelessly made to come and go at will by persons who little think of the eternal mystery of it.

Naturally, the first question propounded when this fact was made known was how the inflammability of paper was to be overcome. The answer was seemingly simple. Edison made his paper more infusible than platinum and more durable than granite. Even this involved no complicated process. The paper was merely baked in an oven until all its elements had passed away except its carbon framework. This was then placed in a glass globe connected with the wires leading to the electricity producing machine and the air exhausted from the globe. Then the apparatus was ready to give out light without flame, without danger, requiring no matches to ignite and free from all flickering.

The *Herald* tells this interesting story of the birth of the incandescent

light, following an account of other experiments: "A spool of cotton thread lay on the table in the laboratory. Edison cut off a small piece, put it in a groove between two clamps of iron and placed the latter in his furnace. The satisfactory light obtained from the tarred lampblack had convinced him that filaments of carbon of a texture not previously used in electric lighting were the hidden agents with which to make a thorough success of incandescent lighting, and it was with this view that he sought to test the carbon remains of a cotton thread.

"At the expiration of an hour he removed the iron mold containing the thread from the furnace and took out the delicate carbon framework of the thread—all that was left of it after its fiery ordeal. This slender filament he placed in a globe and connected it with the wires leading to the machine generating the electric current. Then he extracted the air from the globe and turned on the electricity.

"A beautiful light greeted his eyes. He turned on more current, expecting the fragile element instantly to fuse, but the change was only a more brilliant light. More and still more he turned on, but the delicate thread remained intact. Then, with characteristic impetuosity, and marveling at the strength of the little filament, he turned on the full power of his machine and eagerly watched the consequences. For a minute or more the tender thread seemed to struggle with the intense heat passing through it—heat that would melt the diamond itself—until it succumbed, and all was in darkness. The powerful current had broken it in twain, but not before it had emitted a light equal to that of several gas jets.

Edison hastened to examine under the microscope this curious filament, apparently so delicate, but in reality much more infusible than platinum, so long considered one of the most infusible of metals. The microscope showed the surface of the filament to be highly polished, and that its parts were interwoven. It was also noticeable that the filament had obtained a remarkable degree of hardness, compared with the fragile character before it was subjected to the action of the current. Night and day, with scarcely rest enough to eat a meal or catch a brief repose, Edison kept up his experiments.

"From carbonizing pieces of thread he went to splinters of wood, straw, paper and many other substances never before used for the purpose. The result showed that the substances best adapted for carbonization and the giving out of incandescent light was paper, preferably thick, like cardboard, but giving good results even when very thin."

Edison began life as a newsboy, later he became a telegraph operator, and his life story is one of interest. Pages of *THE AMERICAN EXPORTER* could be filled with it.

Mule's Last Stand Against Electricity.

ELECTRICITY has displaced the mule in transportation service in America at all points except for the haulage of canal boats. Here, however, considerable progress is being made. On one of the largest canals the boats are now towed by electric cars running on tracks along the old towpath. Recent tests on another canal have tried an "electric mule" or motor-driven carriage. This "mule" travels along 18-inch continuous plate girders suspended above the ground on posts, and forming a track along the side of the canal. The "mule" is equipped with two 40-horse-power motors, taking current in the usual way by overhead trolley. These are geared down by double reduction motors to low speed. The tests included hauling two to four canal boats, each loaded to 200 tons, at a speed of four and a quarter miles per hour. The pull was very steady and progress very uniform and much more rapid than animal traction. No wash of the canal banks occurred, as the slight wave motion from the boat died out before reaching the banks. This method is therefore superior to the use of propellers on canal boats, which cause considerable wash.

Electric Novelties on Ocean Steamships.

A LIST of the electrical equipment of a modern ocean greyhound, if written out in full, would look like the catalogue of a supply house.

One of the novelties is an electric griddle cake and waffle range. The automatic egg boilers, like those on the Atlantic steamship *Oceanic*, are designed to cook 200 eggs at once, a clock arrangement causing the basket containing the eggs to hop out of the water at any half minute up to six minutes. Another novelty is a self-dumping oyster cooker for stews. At the termination of a given time the cooker pours its contents into a soup plate and automatically shuts off the electricity.

Paris Adopts American Electrical Apparatus.—The Paris Underground Railway authorities have decided to abandon the use of power cables carrying large currents through the train, and have awarded a contract to American electric interests for 100 complete equipment of electro-pneumatic turret type control apparatus to replace the present system.

American Equipment Chosen.—Contracts for the additional steam plant have just been let by the New South Wales Government for the power station of the Sydney city and suburban tramways. The lines already in operation are about 70 miles in length. More are being built. The initial equipment of the plant will be furnished by American firms.



Cary's Universal Box Strapping.

Made of Soft Steel through which nails can be easily driven.

Put up in coils of 300 feet each and packed 20 coils in a case.

Made in four widths, viz.:

$\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and 1 inch.

Patented in all countries.

Packed very securely for export.

CARY MFG. CO. 19 & 21 Roosevelt St., New York.

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Two-Cycle, 3 to 15 Horse-Power. Four-Cycle, 15 to 100 Horse-Power.

SIMPLE
IN DESIGN.

ECONOMICAL.

QUIET
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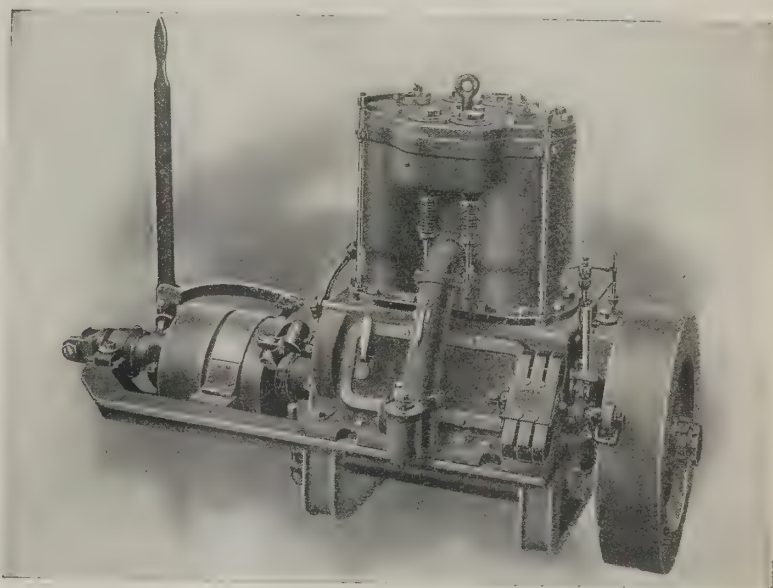
"AN IDEAL
GASOLINE
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Lozier 25-foot 5 H.-P. Launch.

Accepted as the Standard and Most Popular Gasoline Engine in the United States of America and Now Being Adopted Throughout the Entire Civilized Globe.

We build Open, Half-Cabin or Full-Cabin Launches from 12 to 62 feet in length.



The Lozier 20-Horse-Power Four-Cycle Engine.

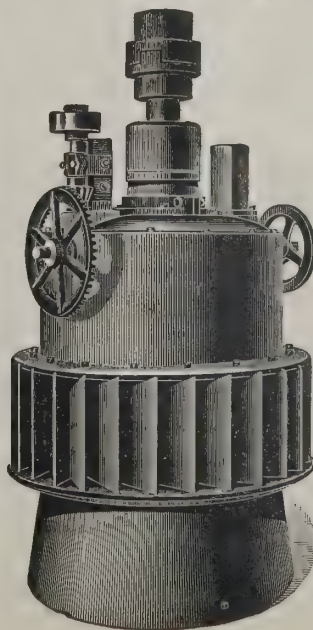
Our Catalogue, thoroughly describing and profusely illustrating our Engines, published in the English, Spanish, German, French, Italian, Swedish, Danish and Finnish languages, mailed postpaid to all parts of the world.

THE LOZIER MOTOR CO., 1 BROADWAY, NEW YORK, U. S. A.

Cable Address: "LOMOCO," New York.

Lieber, Western Union, A B C 4th and 5th, A1 and Private Codes.

The "New American" IS THE Turbine for Export. Why?



Strength, durability and interchangeable parts reduce repairs to a minimum.
Great power for the diameter.
Economy in use of water.

Vertical or Horizontal Installations to meet requirements.

Our Catalogue, which will be mailed on request, furnishes detailed description. We also manufacture Gas and Gasoline Engines, Paper and Pulp Mill Machinery, and a full line of Power Transmission Machinery.

THE DAYTON GLOBE IRON WORKS CO.,
DAYTON, OHIO, U. S. A.

THE IMPROVED United States Cream Separator

WAS AWARDED

GOLD MEDAL (The Highest Award) at the Pan-American, Buffalo, N.Y., U. S. A.

GOLD MEDAL, Paris Exposition, Paris, France, 1900.



U. S. Separator, Dairy Size, 1/2 lb. Frame.

And the official records show that in the Model Dairy at the Pan-American Its Work Excelled Everything, averaging .0138 for 50 consecutive runs, and won World's Record for practical every-day work.

The United States Separator stands without a peer, the most thorough Separator made.

Dairy size U. S. Separators run easily by hand but can be operated by power if desired. Capacities range from 150 to 700 lbs. an hour.

Prices from

\$50.00 to \$165.00.

Large illustrated catalogues sent postpaid for the asking. Orders received through export commission houses.

Please mail duplicate order to us.

VERMONT FARM MACHINE CO.,

Established 1873,

Bellows Falls, Vermont, U. S. A.

Cable Address: Vermonfarm, Bellows Falls, Lieber's, W. U. Int. and Commercial Codes.

The New "Liquid Sunlight."

RADIUM made in America from mineral found in Colorado was shown recently at a meeting of the Technology Club, of New York City, and the latest development in the treatment of disease by the use of liquids charged with radio-activity was described by Dr. William J. Morton, of the New York Post-Graduate Hospital.

"Liquid sunlight" is the name given to fluorescent compounds which may be taken internally, and which will, it is asserted, have remarkable curative effects in cases of cancer, malaria or any disease due to bacteria. It is the latest development from the use of radium in medicine, and Dr. Morton's announcement of results that he has obtained with it was listened to with great interest by several scientific men. Among those present were Professors Hallock, Tucker and Sever, of Columbia University.

George F. Kunz exhibited the American radium, which, he said, was made by Professor Phillips, of Princeton, in his laboratory, from ore found near Silver City, Col. The specimen was of 1,500 activity. It caused a large diamond to glow in the dark and made other minerals luminous. Mr. Kunz also exhibited a small specimen of actinium, a newly discovered mineral having the same properties as radium, and which was described in a recent issue of THE AMERICAN EXPORTER. He said that the specimen was the only one in this country.

"We are coming to a broader conception of what disease is, and what curative agencies are," said Dr. Morton in his address. "Physicians are gradually dropping old medicines, and there is a growing tendency to treat disease from a physical standpoint. That is the case with the use of radium. It is a physical force and is similar to the Röntgen ray in some respects. We can, however, use radium in many ways not possible for the X-ray, and when we know more about it we shall undoubtedly accomplish results that even now seem impossible.

"If we had radium of 100,000 activity, which we soon shall have, we could do much more than with that which we now possess, which has about 7,000 luminosity. One of the greatest benefits is the use of radium for internal treatment. We have tubes containing radium with which cancer of the throat has been successfully treated.

"I have experimented for six months with solutions which become radioactive when exposed to radium for twenty-four hours. To give these solutions in very large doses would probably kill a human being, and great care must be exercised in these experiments. Sunlight is, as everybody knows, a great curative agent, and liquids charged with violet rays have practically the same effect.

"A later method is to employ solutions like quinine sulphate that have a property of fluorescence. A patient may be given some of this solution, and then when radium is held near the body or the X-ray used, the liquid becomes luminous and sunlight may be said to flood the interior of the body. In chronic malaria, cancer of the liver and many other ailments this treatment has already shown good results. It is like placing an ultra-violet molecule cheek by jowl with a diseased cell—benefit is certain to follow."

Dr. Morton said the healing properties of many mineral springs which have been attributed to the chemicals in the waters may be due to imprisoned sunlight. He mentioned several cases of cancer of the face and throat which he has cured by the use of radium.

Steel Cars for New York's New Subway.

STEEL passenger cars are nearer to a realization than we believed, when in a recent issue of THE AMERICAN EXPORTER the subject was discussed.

The cars originally designed for New York's new subway rapid transit system were described long ago in these columns, but it seems that the Paris subway disaster caused the constructors of New York's new system to delve deeper into the problem of safety. Last month they brought forward a specimen of an all-steel car which the electricians of the system and expert car builders are confident combines absolute safety against fires, and 200 of them have been ordered for the subway. The original copper-sheathed cars, 300 of which have been built, will be used upon the elevated railroads, which are controlled by the same corporation.

There are admitted to be many difficulties to be overcome in an all-steel car, and the experts of the company declare that they are confident the most important already have been successfully met. They say they are warranted in predicting that these are likely to be the future type of cars for railroad travel, both underground and surface. George Gibbs, the consulting engineer of the system, declared that the problem of settling on a type of car to be used in carrying millions of people through the subway at express train speed had been one of the hardest to be met by the subway constructors. Mr. Gibbs is himself the inventor of the all-steel car which has now been ordered. It was necessary to secure a car which should be absolutely fireproof, so as to prevent a disaster here such as that of last summer in the Paris subway, where the burning of wood in the subway cars led to the stampede and the suffocation of passengers. In the steel cars now ordered there will be no wood used and no inflammable material, save possibly the rattan seats.

"In the spring of 1902," said Mr. Gibbs last month, "it became my duty to design suitable car equipment for the subway lines of the Interborough Company. The various types of cars in use throughout this country and abroad were examined and a general type and size were adopted, with a view to meet subway limitations and conditions of operation. The problem of the

proper protection of passengers in case of accident or derangement of the electrical apparatus received special attention, and all available materials of construction were considered with reference to their suitability. The possibility of building a passenger car of metal entirely is considered by us now to be the eventful development of the passenger-carrying vehicle. Such vehicles have not been placed in use in any part of the world, and the design has involved radical departures from known practices."

Consulting Engineer Gibbs explained that there would be no danger of passengers receiving a shock from escaping electricity in case of a "short circuit" or other accident. It is claimed that the steel car forms the best "ground," and that escaping electricity, instead of going into the frame steel work of the car and thus causing shock will find its way back to the ground and all the fuses and circuit breakers will be opened, making the section of the third rail "dead," thus preventing the electricity from continuing to escape through the body of the car. The interiors, which will be arranged much the same as the present elevated cars, will have an aluminum finish. The seat frames will be of steel.

American Genius Ameliorates Deafness.

MENTION has previously been made in these columns of the invention perfected by a young American electrical engineer, whereby deaf persons were enabled to exercise the sense of hearing. The apparatus seems to have stood the most severe tests satisfactorily, and in a recent issue of *The Onlooker*, a British publication of influence and importance, proper credit is given for the achievement accomplished by the American inventor. *The Onlooker* estimates that in the British Empire alone there are 2,000,000 people who are more or less afflicted with deafness, and further declares that the number is increasing every year. Its editor, therefore, considers that the young American engineer has performed a world-wide public service in perfecting his apparatus, which it describes as "an adaptation of the telephone microphone" and which is called an acousticon. The instrument consists of three parts, a receiver, an ear-piece and a battery which are connected by wires. The duty of the receiver is to act as an outer ear in collecting the sounds, and, to a certain extent, assorting and accentuating them. One of its surprising properties is its power of modifying the sounds which it receives, so that on the acousticon loud reports are modified, while the merest whisper is intensified and reaches the sense of hearing as distinctly and emphatically as a loud one. The sounds collected by the receiver pass to the ear-piece, which carries them direct to the nerve centers of the inner ear, whence they reach the brain by those vibrations which we know ourselves as sounds. *The Onlooker* says:

"Reports of the wonderful results attained by this instrument, vouched for by men of science, whose reputation is a sufficient guarantee of their credibility, have long reached us from America. During the inventor's visit to this country he was no less successful. In Derby, before the Duke and Duchess of Newcastle, he exhibited his invention in the Institute for the Deaf and Dumb, when the audience was so impressed by the success he attained that they immediately started a subscription for a fund to supply the poor with this instrument. It is an open secret that the Queen, whose great interest in every advance for the relief of suffering is so well known, was greatly impressed by this invention and took the keenest interest in the demonstration which he gave at Buckingham Palace. One of the most striking uses of the acousticon is its usefulness in teaching deaf mutes the use of speech and articulation. At the end of half an hour's instruction a girl was able to articulate some words accurately at will. Friends who accompanied her, and had never heard her utter an intelligible sound in her life, looked upon the successful treatment as verging on the miraculous."

American Autos to Make Mile in Thirty Seconds.

BARNEY OLDFIELD, the American automobilist, speaking of the marvelous advances which our automobile mechanics are making, said the other day: "The mile will be made in thirty seconds within two years. I do not believe that the thirty-second mark will be struck within a year; still it may be reached. I predict that within a year they will go under thirty-five. In fact, I am after that record. Of course, others may reach it, for there are a lot in the field now—men of means and nerve, who have the time and inclination to buy cars and drive them.

"I want a car built for my use with which to make the try. The car as it is built to-day will not do that. The racing car for thirty-second mile must be built low. It must all be figured out by scientists carefully and planned in every way for this particular sort of straightaway work. The right car will not be useful for anything but just straightaway work. It must be built of the least wind resistance—low and scooped-shaped—so the driver is inside the car and out of the wind himself.

"It may readily be seen then that the building of a car to go under thirty-five will not be such hard work as might be supposed. But for every second under thirty-five there will have to be very marked improvement and scientific changes.

"Of course, when they travel thirty seconds to the mile, or a matter of 176 feet to the second, there will be danger. I have predicted a death or two at such speed, and they will come, but that will stop none of us from trying, for think of the good things awaiting the man who goes the mile in half a minute, or a speed equal to the fastest locomotive!"

Double Engine Traction

In THREE Sizes:

20 H. P. - Weight, 9½ Tons
 25 H. P. - Weight, 10½ Tons
 30 H. P. - Weight, 11¼ Tons

Boxing for Export will increase weight 20 per cent.

Hauling Capacity, - 15 to 25 Tons,
 BESIDES FUEL AND WATER.

These Engines Always Give
 Maximum Power.

They use
 Wood,
 Coal or
 Straw
 for fuel.



TORONTO ENGRAVING CO.

Where the reduced speed
 of a single engine will stall
 it, the Double Engine
 walks right along.

Wheels (22 to 28 inch face)
 shown are for Threshing
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Special Wheels
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Boilers are of ample size.
 With indifferent fuel under
 severest stress will blow off.

Engines on "belt-brake"
 show easily 40 to 60 per
 cent. increase in power over
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MANUFACTURERS OF

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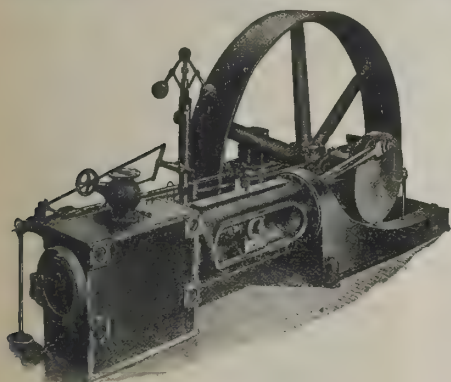
OF EVERY DESCRIPTION.

SOLE BUILDERS OF

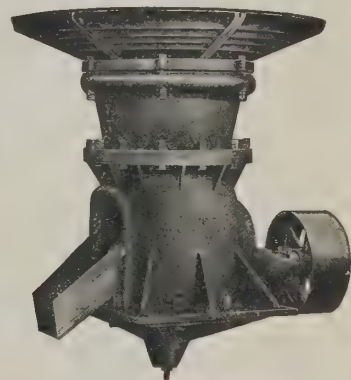
GATES ROCK AND ORE BREAKERS.

Pumping, Blowing and Hoisting Engines,
 Air Compressors.

REYNOLDS CORLISS ENGINES FOR ALL POWER PURPOSES.



REYNOLDS CORLISS ENGINES
 for All Power Purposes.



GATES ROCK AND ORE
 BREAKER.

PELTON WATER WHEELS

PIKES PEAK POWER CO.

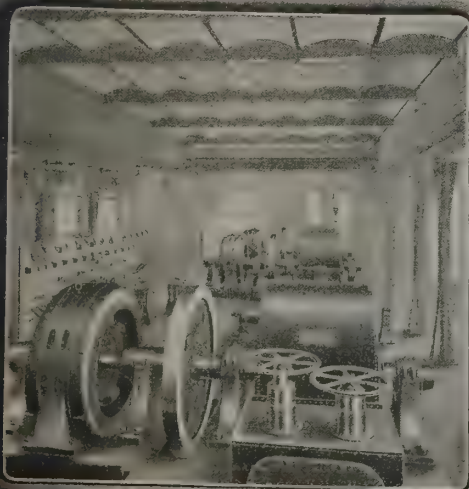
The illustration herein shown is that of Pikes Peak Power Co.'s Hydro-Electric Transmission Plant, located near Victor, Colorado. It consists of three 1,000-horsepower Pelton Wheels, operating under 1,180-foot head and direct-connected to electric generator.

This electric power is supplied to the many mines, mills and other industries in that vicinity. This plant has been running day and night for four years at practically no expense for repairs. Send for catalog illustrating many other plants of similar character.

PELTON WATER WHEEL CO.

150 Liberty Street, New York.

128 Main Street, San Francisco.



MONSTER SHIP LAUNCHED.

American Giantess Christens New Giant Freight Carrier for Pacific Trade.

THE greatest event of February in the United States and perhaps in the world, so far as peace and progress are involved, at least in a commercial sense, was the launching of the new steamship *Dakota* on the banks of the historic Thames River, in the State of Connecticut, on the Atlantic coast of the United States. The *Dakota* is a giant among ships and is a twin sister of the *Minnesota*, which was launched last spring and described in *THE AMERICAN EXPORTER* at the time. The *Dakota*, giant that she is, was christened by a giantess, Miss Mary Belle Flemington, who hails from the State of North Dakota, which gave the ocean giantess her name. Miss Flemington is only 17 years old, but stands 6 feet 2 inches, and as she broke the bottle of wine against the ship seemed to typify American womanhood as being great in no less a degree than its representative giantess who officiated at this interesting event.

In our issue last May we printed a description of the *Minnesota*, twin to the *Dakota*, but as it may not be convenient for our readers to refer back it may be said briefly that the *Dakota* will carry 2,700 passengers and a crew of 300 men, in addition to cargo amounting to 22,000 tons on a draught displacement of 30 feet. The two ships are the largest cargo carriers in the world and are the largest vessels ever built in America. The *Minnesota*, launched last April, will make her trial trip the coming July and the *Dakota* will be completed in September. Some idea of the size of these ships can be obtained, when it is stated that they are 630 feet in length, lacking only a few feet of the length of the Kaiser Wilhelm II and other fast Atlantic vessels, while their breadth of 73 feet and molded depth of 56 feet place them far ahead of anything afloat for cargo carrying capacity. There have been 22,000 tons of steel used in the construction of each ship, and the rivets used on each hull weighed 375 tons.

The *Dakota's* launching was made a great affair. James J. Hill, president of the company which built the vessels, and who has great faith in the expansion of our commerce over the broad Pacific Ocean, where the *Minnesota* and *Dakota* are destined to ply, had this to say, in part, to the assembled guests:

"I want to thank you all for the sympathy and support you have given us by coming to witness the launching of the *Dakota*. Some of the people in Wall Street seem to be willing to furnish us with what they call a merchant marine. They have merchant marines and navies and such things to sell. But somehow or other the ships we can get that way are not laden with gold. They turn out to be no good. If we want good ships we must build them ourselves. Every standard of life in our country is highest and better than it is anywhere else, except one thing, and that is transportation. Transportation is the problem which confronts the industrial future of this country. If we would gain and keep the markets of the world we must furnish cheap transportation. If we fail in this, these great sister ships which you have seen, the *Minnesota* and *Dakota*, will soon be for sale—and I mean s-a-l-e and not s-a-i-l. I mean they will soon be under the hammer of the auctioneer.

"The problem of inland transportation was a hard one, but we have solved it. The problem of transporting goods across the Atlantic was difficult, but we have at last made a good start at solving it. The problem of conveying the product of our rich and fertile land across the Pacific is most difficult of all. I'm not afraid to tackle it. All I'm afraid of is a fire in the rear. I hope and believe we will soon have more ships on the Pacific. I hope and believe we, in America, will not adopt that malady which they call in Britain 'physicalitis.' I hope that those who control the affairs of this nation will always realize that the conquests of commerce are a hundred times more to be desired than the conquests of war."

Many other speeches were made by distinguished men.

Another Big Ship for Transatlantic Service.

THE new steamship *Baltic* is expected to make her maiden voyage to New York in June, and her advent will mark another step in the progress that is being made in improving transportation facilities between the Old and New Worlds. The *Baltic* is the largest ship ever built, being nearly three city blocks long. She is 25 feet and 9 inches longer than the *Cedric*, which previously held the record for size, and exceeds that vessel in gross tonnage by 2,000 tons. The dimensions of the *Baltic* are as follows: Length, 725 feet, 9 inches; breadth, 75 feet; depth, 49 feet; gross tonnage, 33,000; capacity for cargo, about 28,000 tons; displacement at load draft, about 40,000 tons.

Like the *Cedric*, the *Baltic* is not designed to break speed records, steadiness being the aim sought. She will be fitted with engines of the quadruple expansion type and of about 13,000 indicated horse-power. Her speed will be about 16½ to 17 knots, and she will cross the Atlantic in about eight days. The *Baltic's* great size will make it possible to add improvements even beyond the other vessels of her type. There will be accommodations for nearly 3,000 passengers, besides quarters for a crew of about 350.

In addition to the ordinary staterooms there will be suites, consisting of bed, sitting and bath rooms; also single-berth staterooms. One of the most notable features will be the grand dining saloon, a handsome apartment situated

on the upper deck. It will extend the full width of the ship—75 feet. It will be exceptionally lofty and airy, and will contain seating accommodation for 370 people. With its domed skylight and artistic and effective decoration this will be one of the most magnificent dining saloons on the Atlantic.

A New Device to Aid Mariners at Night.

MANY improvements have been made in Lord Kelvin's compass and sounding machine, according to reports received at the United States State Department. In the newest form of the compass the illumination is effected from below, and either oil lamps or electric light may be used. The bottom of the compass bowl is in the form of a strong, thick lens, through which the light is refracted on the card. The intensity of the light may be varied at the pleasure of the observer, and this is found to be exceedingly useful in taking the bearing of stars or other faint lights.

A new anti-vibrational suspension has been designed, which insures great steadiness in the card, and a new form of helmet, with rifle sights, facilitates the work of taking bearings. With the new helmet navigators are able to take bearings of lights and stars by night with the same ease and convenience as bearings of the sun are now taken by day. The new form of sounding machine has been constructed of a height which has been found from practical experience to be the most suitable for the work of winding in the line. In addition to this great advantage, the new machine has an improved form of brake action, and a further advantage is that the working parts of the machine are all in sight and can be easily removed if necessary.

Motor Boats Make a Great Show.

THE first February exhibition of motor boats held in New York was quite as great a success as the January automobile exhibition. The advances made in the motor-boat industry in America in the last two years have been marvelous. There were thirty exhibitors, seemingly few but really many when one considers that the industry is still in its infancy. One of the new inventions shown was a motor devised by an American. The motor is moved by gasoline, but the motor does not whirl a propeller. The power is applied to eight paddles, which work on a slide and fulcrum inside the bottom of the boat, the blades being in the water beneath the boat's bottom. The inventor says that by this method of propulsion the propelling blades do not push the water away from the boat, but push the boat away from the water. It is claimed that this particular craft can show a speed of eighty miles an hour.

One of the decided novelties was the application of the popular gasoline explosive motor to an iceboat. The substitute for sails is a wheel with sharp teeth, which engage the ice. The inventor modestly admits that his first power iceboat is a bit crude, but in its trial trip it made forty miles an hour. He is designing improvements toward increasing the factor of safety. He thinks the matter of speed will take care of itself and doubts if there is any limit to it.

Fastest Automobile Launch in the World.

THE honor of possessing the fastest automobile launch of its kind in the world rests with this country. This boat is the *Vingt-et-Un*, which has been challenged to a match race for a \$2,000 cup this season. The boat had its trial trip on the Hudson off Yonkers, in the State of New York, in November and developed the remarkable speed of a mile in 2.26, with the wind and tide, while against the wind and tide it did three minutes exactly. At the greatest speed the rate was a little over 24 miles an hour. The boat is 30 feet long and is equipped with a 21 horse-power four-cylinder motor, placed well forward, practically in a separate compartment, which is covered when the motor is in use. One man steers and controls the engine, and the cockpit will hold about three or four persons. The boat carries 25 gallons of gasoline, which is said to be sufficient to carry it 300 miles. The total weight of the boat, with the engine, is 770 pounds. The craft was designed by Clinton H. Crane, who had designed some of the best and fastest of the small-class yachts in recent years.

Air Ship and Ice Boat.—One of the curiosities at the New York Motor-Boat Exhibition last month was a 15-foot model of the airship invented by Lawrence E. Dare, who has long been studying and experimenting in aeronautics. Mr. Dare believes his ship, when built on the model's lines, with a 60-foot turtle-shaped gas bag, will win a big prize at the World's Fair this year. He says that after he proves to the world that he has solved the problem of aerial navigation in practice he will make a practical light-hulled boat for his car that can be disconnected from his gas bag and navigate in water if the exigencies of aerial tours require it. The addition of runners, Mr. Dare says, would make a "scooter" of it, in case of an unavoidable descent upon frozen seas or floating ice.

Best Year in Export Vehicle Trade.—The United States Government's annual statistical report of our foreign trade shows 1903 to have been the banner year in the value of carriages exported, the figures showing an increase of half a million over 1902, the best previous year. The value of carriage exports for 1903 was \$3,514,363. The actual increase is larger than the figures indicate, because prior to 1903 wheelbarrows, push carts and hand trucks were included with carriages. The exports of these, amounting to \$175,671 in 1903, are now given separately.

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

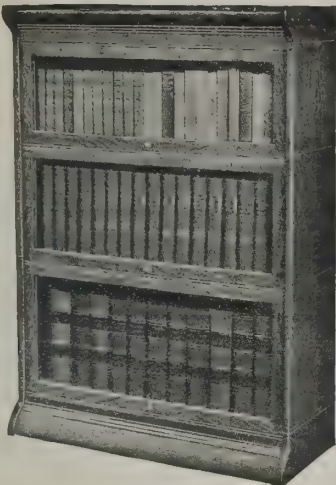
Top Section
List, \$3.00

9 3/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 1/2 cubic feet. This cut represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/4 inches deep and 32 1/4 inches long. Made of selected quarter-sawn oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warehouses, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

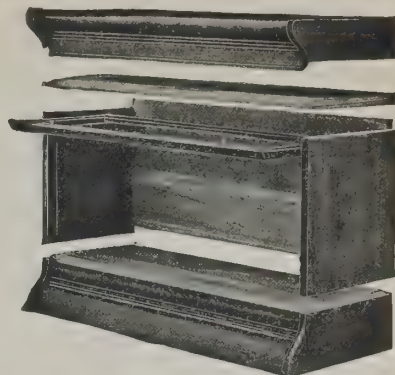
ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



Top Section
List, \$3.00

9 3/4" Section
List, \$4.15

9 3/4" Section
List, \$4.15

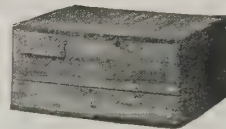
11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warehouses and on shipboard.

THOMAS K. OBER & CO. (INC.)

832 DREXEL
BUILDING,

Sole Export Agents of the Kitson Hydro-Carbon Heating and Incandescent Lighting Co.

PHILADELPHIA,
PA., U.S.A.

Keros Incandescent Oil Lamps.

Lamps of 600 Candlepower, 1,000 Candlepower and 2,000 Candlepower, for lighting Dwellings, Stores, Factories, Wharves, Streets, Warehouses, Parks, Private Grounds, Plantations, Mines, Railway Stations and Yards, Railway Excavations and Construction Work.

One Gallon of Kerosene Oil Gives a 1,000-Candlepower Light for Twenty-five Hours. Perfectly Safe. Does Not Increase the Insurance.

Send for Illustrated Catalogue and Price-List, giving full information.



No. 505.
Outside Arc
Lamp.
Outfit. with
Tank.
1,000 Candle-
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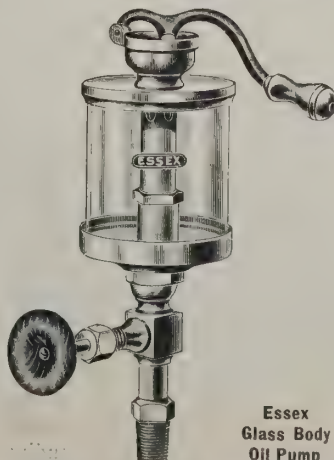
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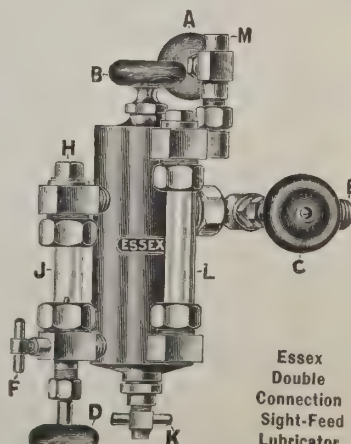
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Fate of the Last Man on a War-Fish.

ALL of the nations of the earth are interested in the development of submarine torpedo boats, for the perfection of this branch of naval warfare will tend to eliminate battleships from international conflicts. In the course of construction and experiments in America with these new war-fish, as they may be called, several accidents have happened. It was therefore considered advisable to settle once for all the much-mooted question as to the possibility of the crew's escape in the event of one of these boats meeting with a mishap while submerged that would prevent its rising to the surface. Because of the practical impossibility of egress through the conning tower when it is subjected to an enormous pressure of water, as it would be at the bottom of the sea, it was thought that all in the boat would be lost in a contingency such as has been presented; but experiments made with dogs now have proved conclusively to naval officers that the members of the crew could be shot out of the torpedo tube without injury—that is, all could with the exception of one.

One man would have to stay behind to work the mechanism in order that his fellows might escape, and thus the question arises, What would become of the last man? In the opinion of the submarine boat builders, there can be only one answer—the last man would have to submit to being buried alive.

It is clear from this that some time an opportunity to display a new form of heroism may be presented to a naval man, an opportunity to save his fellows by rising superior to the terrors of a death that would creep upon him with maddening slowness. It would take a long time for the air in the boat to be exhausted, and then would come the lingering torture of suffocation.

The torpedo firing tubes are situated in the bow of the submarine boats and are about 11 feet long. At both the inner and outer ends there are water-tight doors. When a torpedo is to be fired it is inserted in the tube by opening the inner door while the outer door is kept closed. The inner door is then shut, the outer is opened, a man turns a lever that releases 50 pounds of compressed air and, whiz! out goes the torpedo. After that the outer door is closed the water in the tube is drained out, and the tube is ready for another charge.

The experiment of firing dogs through the tube was made recently on the submarine boat Shark in Narragansett Bay, U. S. A. Two large animals were used for the test. One at a time they were placed in the tube and a block of wood inserted behind them to make the "charge" fit snugly. The animals and the blocks were then expelled precisely as if they had been torpedoes. It was thought by some naval officers that the force of the compressed air charge would kill the dogs, but after their violent exits from the tubes they promptly rose to the surface and began swimming around as if nothing had happened. They were picked up and taken to the station, where they are now capering around as lively as ever.

A reporter who called at the office of the torpedo-boat company, which designed the nine submarine craft that the United States Navy has in commission, was told by the manager that it would be perfectly practicable to expel men without injury from the torpedo tubes, just as the dogs had been "fired out."

The manager said that after a man had crawled into the tube and the outer door had been opened, letting in the water, only a fraction of a second would elapse before he would be expelled, so that the time during which he would have to hold his breath would be infinitesimal. If the bow of the boat were pointed downward, however, it would be possible to fill the tube with enough compressed air to keep out the water entirely when the outer door was opened. It would be necessary to insert a block of wood in the tube with the man, as was done with the dogs.

The builders think there is little danger of one of their boats ever meeting with an accident that would prevent its return to the surface. In fact, they assert, that such a thing could happen only in the event of the boat running afoul of a cable in a harbor, getting entangled in a wreck or wedged in between rocks. They concede that if such a mishap should happen at least one of the six men who usually compose the crew of a submarine boat must die. One man would have to stay behind to pull the lever that connects with the compressed-air valve.

American and Other Interests in Asia.

LAST month we announced promulgation of the American-Chinese treaty, but gave little space to it, for the reason that at the time it did not seem of as much interest to our readers as subsequent events in the way of hostilities between Japan and Russia have made it of possible concern to them. A writer in *Outlook* gives an interesting account of the treaty's negotiations, from which these abstracts are made: "During the last decade American exports to China have increased sixfold, and with the Chinese province of Manchuria American trade has specially increased. We are, therefore, interested in a change of political control in China more than any other power, because the possible value of our trade is, we believe, greater than that of any other country.

"The American-Chinese treaty which has just gone into effect is the result of nearly a year and a half's negotiation, but it is no mere coincidence that on the day when the Chinese Emperor signed our treaty he also signed a Japanese-Chinese treaty covering much the same ground as ours. The telegraphic exchange of supplementary protocols resulted from a desire on both sides that

the new arrangement should take practical effect; if possible, before the outbreak of hostilities in Asia, if they must come.

"The principal provisions of the treaty relate to trade, and the provision which took effect immediately was that which opens three new localities in Manchuria to foreign trade—Mukden, Antung and Tatungkau. Mukden being provided for in a similar Japanese-Chinese treaty, also proclaimed, Japan and America should occupy the same vantage ground as an outpost for their trade. However pertinent Russia's objection that Mukden, a river port, may not be regarded as belonging to international trade as a coastal port does, Manchuria is still Chinese and not Russian territory. In conceding the American and Japanese requests for trade enlargement, the Chinese Government has done precisely what it did when the Powers, Russia included, requested the opening of the Hankau and other river ports in China to international commerce. Mukden marks, as has nothing else, the fact that American and Japanese commercial interests are one. Hence, in her contention with Russia as to Manchuria, Japan has been really America's protagonist. The presence at an early date of our consular officers, not only on the coast, but in the interior of Manchuria, will, we trust, not only insure the principles of 'the open door' there, but will also diminish Russia's opposition to Japan's demands concerning that region.

"We are glad to note an evidence that this is so. The day after the Chinese Emperor signed the American treaty Count Cassini, Russian Ambassador at Washington, called upon Secretary Hay and repeated to him the assurance of the Russian Government that 'Russian authorities will place no obstacle in the way of the full enjoyment by the Powers having treaties with China of all the rights and privileges guaranteed by such treaties in Manchuria.'"

The war between Japan and Russia is bound to interfere with trade and commerce in the zone affected. It is an unfortunate war, for it is one that could have been avoided, in the opinion of many Americans.

Electricity's Increased Use as a War Agent.

THE American War Department is not behind the Navy Department in taking up and utilizing the newest electric appliances. An interesting instance of the rapid extension of electricity is furnished by the fortifications distributed along our coast. A few years ago the electric light was introduced to add to the comfort of the garrisons and to provide better illumination of the work. Once a generating plant had been installed there was at hand a supply of power in a convenient and easy controllable form, and this led to its use for purposes which were not contemplated at the time the plant was installed.

Electric fans have been put in to make the living quarters more comfortable in hot weather, and electric motors have been adopted for training the guns—a class of work for which they are particularly well adapted. Motors are used to drive the ammunition hoists and do other work which before had either been done by hand or some less satisfactory power. Searchlights have been installed, enabling a fortification to sweep the sea at night.

The various posts of the fortress are connected together by telephone, so that the commandant is in touch at all times with the entire garrison, and can instantly transmit orders to any point. The various fortifications along the coast are tied together by telephone and telegraph, so that on the appearance of the enemy at any point all the fortifications would be informed of it. Submarine mines are controlled electrically, and even the guns may be fired by this means by an officer at some distant point. By means of wireless telegraphy a fortification can be kept in touch with the scouting vessels, and would be informed of the approach of an enemy long before he is visible from the coast.

The telautograph may be brought into service for transmitting orders, and electric signaling lights are replacing the older types. Electric lights lighting the range-finder stations, and electric-clock circuits furnish accurate time to all parts of the fortifications. To insure the continuity of these manifold services, accumulators are now installed, so that there will at all times be a constant and reliable supply of power. Thus, from being at first a small auxiliary, the electrical equipment has extended until it is now probably the most important part of the entire equipment of the fortress.

Corea a Growing Market for Our Products.—American products, both manufactured and otherwise, are popular in Corea, but the very large proportion reaches that country through China and Japan. It is only within a comparatively short time that the direct trade of the United States with Corea was of sufficient importance to justify a separate record. In 1897 the exports from the United States to Corea were \$509 in value; in 1898, \$125,000; in 1902, \$251,000, and for the eleven months ending with November, 1903, \$366,919, indicating that for the entire calendar year 1903 the total exports to Corea from the United States were about \$400,000.

Exports Show Great Gains.—The Government returns for January of this year show that the exports of merchandise from the United States in that period amounted to a valuation of \$141,663,483, being an increase of \$7,671,214 over the same month in 1903. For the seven months ending January 31st the exports showed a gain of \$72,282,848, as compared with the previous corresponding period. All of which is a convincing testimonial of the worth of American goods.

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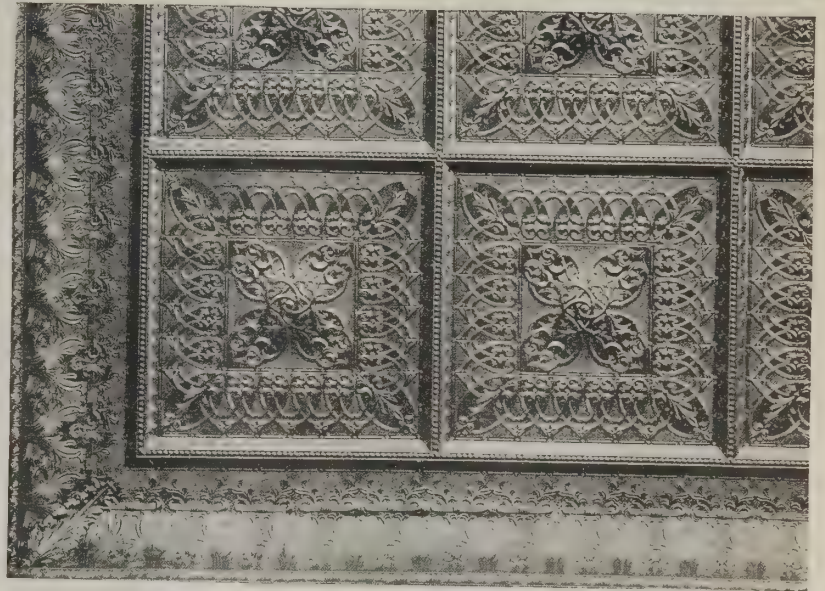
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CUT NO. 34 A

No. 122E—Size, 35x78 inches, with spreader; assorted colors. Price, \$5.80 (£1 4 1) per dozen net.

No. 14SE—Same as above, with addition of pillow and wide valance; assorted colors. Price, \$11.26 (£2 7 1) per dozen net.

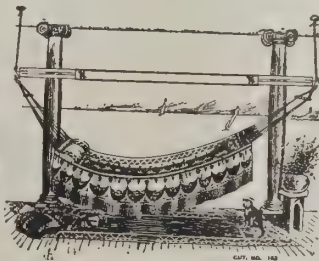


No. 64SE—Size, 49x82 inches; with pillow, wide valance and spreader; assorted colors. Price, \$26.00 (£5 8 1) per dozen net.

No. 64SE—Same as above, except "narrow valance" in place of "wide valance." Price, \$21.50 (£4 10 0) per dozen net.

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We manufacture Hammocks of all sizes and prices. The Utopia Hammock is patented in all the large countries of the world.



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No. 44SE—Arawana Hammock (without trapeze); size, 39x81 inches; with spreader, pillow and wide valance; assorted colors. Price, \$20.95 (£4 2 1) per dozen net.



No. 728—Hammock Support with Utopia Hammock. Adjustable support (to be used with this or any other hammock). Price, of support alone, \$45.00 (£9 6 1) per dozen net.

No. 687—Utopia Hammock (without support); with spreader, adjustable pillow, wide valance and seat. Price, \$39.90 (£8 5 0) per dozen net. Adapted for indoor and outdoor use. Degree of recline easily changed from sitting to sleeping position by extending or contracting the frame.

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No. 689—Canopy, Umbrella Top; 90 inches high, 9 yards around. Price, \$1.05 (£0 5 3) each net.

Plain Mosquito Netting, 70 inches wide, per piece of 8 yards; white, 35¢ (£0 1 1); colors, 37½¢ (£0 1 1) net.

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This ribbon can be put on the machine without soiling the hands.

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These ribbons are unique in all respects except printing—others will print, but Little's Brilliant Satin-Finish Ribbons copy stronger from start to finish than any others, because the pigments are better, made differently, cost more. No risk. Everything guaranteed.



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New British Ambassador's Oratorical Debut.

DISTINGUISHED citizens of both countries attended the banquets which were held simultaneously in New York and London recently by the Pilgrims of the United States and the Pilgrims of England, when cable greetings were exchanged and many eminent men made speeches tending to cement the friendship between Great Britain and the United States. A notable feature of the New York banquet was the hearty reception accorded to Sir Henry Mortimer Durand, the new British Ambassador at Washington. Sir Henry's reply to a toast in his honor displayed the thoughtfulness of a diplomat and a broad conception of the friendly relations of the two countries. He said in part:

"Looking about me, surrounded by the faces of white men speaking my own language, and most of them akin to my own people, I feel as if the days of my pilgrimage were over. It really is very hard for an Englishman in America to realize that he is a stranger. He has met with such civility and warm-heartedness that the idea hardly occurs to one. A foreigner he cannot feel, certainly. I have been asked many times since I have been here whether I was beginning to feel at home in America, and I could only answer: 'Beginning to feel at home? Why, how could I feel otherwise?'"

"I am afraid that some Americans think there is too much talk about blood kinship. Perhaps there is. We are fond in England of talking about the Anglo-Saxon race, and we love to think that you and we both form parts of it. But we do not deceive ourselves.

"We know that in a sense a new race is being formed upon this Continent. We know that you are taking to yourselves men of many nationalities and welding them into one great whole. We know that after a lapse of a very few years a man who comes to this country is not a Frenchman, or a German, or an Italian, but an American. And we know that as time goes on a portion of the English blood in the American is likely to be changed.

"But, for all that, there are likely to be close ties between us. Common language is a bond of immense strength. Besides our language, which carries with it a common literature, we have, I think, very much the same way of looking at things, the same ideal. I think that, whatever happens, the spirit of the coming race will be an Anglo-Saxon spirit. [Applause.] It will be of the Anglo-Saxon stamp.

"Meantime, there is one thing of which I think there can be no doubt, and that is that the relations between our country and yours of late changed very much for the better. Certainly in England any feeling of coldness which used to exist has long passed away, and the only feeling toward America is one of warm good-will. [Applause.] Many prominent Americans have told me that if this feeling was not always general it is general now.

"I hold that no nation has ever done greater things than England has done in India, to create an empire of 300,000,000 of men and rule it justly for the benefit of its people. I think that Americans may well be proud of that achievement, too, for the foundations were laid before you.

"Michael Herbert, my predecessor, when speaking here less than a year ago, said that he hoped the reflection of good feeling now rising in Ireland would be felt here in this country, and that the Irish race would bury their enmity now and forever. There is in England nothing but good-will toward the Irish, and I hope that it will always remain so; otherwise, with an Irishman directing our foreign policy, an Irishman at the head of the English army, and another Irishman commanding the Channel fleet we should be in a perilous position."

"To See How the Americans Do It."

THE United States Consul at Frankfort, Germany, Simon W. Hanauer, contributes an interesting chapter to the current history of American progress in the following correspondence: "Not only in political and international law, but in the realms of science, mechanics, economics and business methods, the United States is becoming the high school for the other nations of the world. This is shown by the numerous agricultural and commercial commissions, experts in manufacturing, students of political economy, scientists, ministers of State and chiefs of governmental bureaus, managers of industrial concerns, banks, etc.—all from the highly cultured European countries—visiting the United States for the sole purpose of studying American working methods.

"With far-seeing men in Europe it has become a matter of firm belief that it is strictly essential to study American ways, means and methods before the education of higher craftsmen or managers of industrial or public works, etc., can be called complete.

"The statements which Mr. Goldberger, Dr. Salamansohn and other chiefs of great German financial institutions; Wilhelm von Polenz, the author; Minister of State von Rheinbaden and his accompanying counselors and experts, have made, and which were published by the press and discussed at meetings of economic bodies in Germany, caused deep interest in that country and in all industrial circles of Europe. As a result, numerous visits from other experts, bankers, managers and scientists are to follow, all with the same aim—to study the United States; to see how the Americans do it."

"Three of the most prominent men of German finance and mechanical science are now proceeding to the United States for this purpose. They are Director Dernburg, of the Bank of Commerce and Industries; Director Winterfeld, of the Berlin Commercial Company, and Privy Councilor von Rathenau. The two first named represent great banking and promoting institutions,

and Mr. Rathenau is director-general of the greatest electrical works in Germany."

Readers of the AMERICAN EXPORTER have been kept well-informed regarding these invasions of knowledge-seekers. Almost everything in America is open and above board. Some patentees of inventions have their secrets to preserve, but otherwise the nation is willing to be a high school or an academic institution for those elsewhere in the world who think our methods may be better than theirs. We do not claim that they are, but we are willing to let the acts of our foreign friends justify the increasing value that they seem to place upon our methods and our products. The increase of our exports of manufactured articles is praise enough. If our competitors can benefit by their visits to America we are generous to a point where we will help them all we can, on the broad principle that we are interested in the general welfare of the entire world. It is doubtful if some of our readers fully appreciate the broadness of the average American manufacturer. There are always exceptions to rules, but the rule is that American manufacturers try to the extreme degree to make the best article for the least price that it is possible. In doing this they figure on service and utility.

All machinery is bound to wear out eventually. To a considerable degree it depends upon the treatment it receives, but American manufacturers put their products to severe tests before they place them upon the market and exercise a careful supervision in their manufacture that makes their products thoroughly serviceable, barring extraordinary contingencies which, of course, seldom occur.

British Adopt American Weaving Methods.

UNITED STATES CONSUL FRANK W. MABIN, at Nottingham, England, reports that the visit of British cotton spinners and manufacturers to the United States some months ago is apparently bearing substantial results. He also says: "Changes are being adopted in some of the largest weaving establishments along the line of economical administration, but most significant of all is the tentative introduction of the American automatic loom in several mills. In other establishments recent inventions for the automatic change of the shuttle are being tested, and in some factories the American system of cloth and welt carriers and loom oilers and cleaners is being introduced, so that the weaver's duty is limited to weaving alone. For relieving the weavers of the duties thus automatically performed one firm proposed a reduction of 3½d. (7 cents) per loom per week, which has caused a strike. The workmen claim that the incessant confinement to the loom is more trying than the former conditions, the carrying of completed cloth pieces to the warehouse and the cleaning and oiling of the looms being, in fact, a restful change. No speedy settlement of the controversy is in sight."

American Workmen Seventy Years Ago and Now.

MUCH of America's success is due to the intelligent efforts made by the country's workmen to improve their condition and take advantage of the opportunities offered them for improvement. Recently the trade unions of the big city of Boston invited President Eliot, of Harvard University, to deliver a lecture to them in Faneuil Hall. President Eliot consented, and spoke to an audience of 5,000 union men. It is worth while remembering that seventy years ago the trade unions of Boston gave a dinner and found no place open to them except Faneuil Hall. Twenty-two societies refused to rent their halls to labor organizations. In those days a union man was regarded as half a criminal, and no college president would have anything to do with unionists.

Seventy years ago the union men met in Faneuil Hall as social outlaws. Last month they met in the same place as highly respected citizens of the great municipality of Boston.

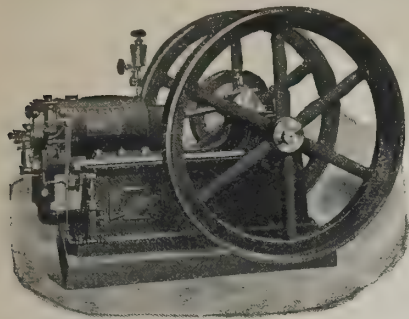
Enterprising Concern Enlarges Plant.—The Lunkenheimer Company, Cincinnati, makers of brass and iron steam specialties, owing to the unprecedented and growing demand, both abroad and at home for their specialties, have again greatly increased their facilities so as to be in position to make prompt shipments. They report an increasing export demand for their specialties and inform us that they will shortly place some new specialties upon the market, which will be shown in a complete catalogue to be issued in the course of the next few months.

Hawaiian Commerce.—The external trade of the Hawaiian Islands continues to grow under American control. In 1903 the total was \$40,000,000. The United States figures largely in both exports and imports. Hawaii took \$1,000,000 in steel and iron manufactures from the parent country and was a large consumer of other products.

Three New Booklets.—The Buffalo Forge Company, Buffalo, N. Y., U. S. A., has just issued three new booklets on volume blowers and exhausters, mechanical induced draft and compound engine tests, which will be sent to interested readers of THE AMERICAN EXPORTER who make application.

Growth of the American Nation.—The United States to-day is a nation more numerous by 2,000,000 souls than it was a year ago. Half this growth is natural increase, half comes by immigration. The total increase of a single year is nearly equal to the whole population of Greece or Denmark.

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We make a specialty of Steam Engines and Gas and Gasoline Engines and Pumps from a 1 H. P. Combined Engine and Boiler for \$100 and a 2½ H. P. Gasoline Engine for \$125 up to any size in either Vertical, Horizontal, Marine, Hoisting, Pumping, Locomotive and Portable Engines on Wheels.

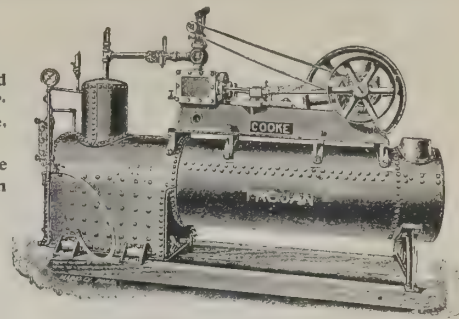
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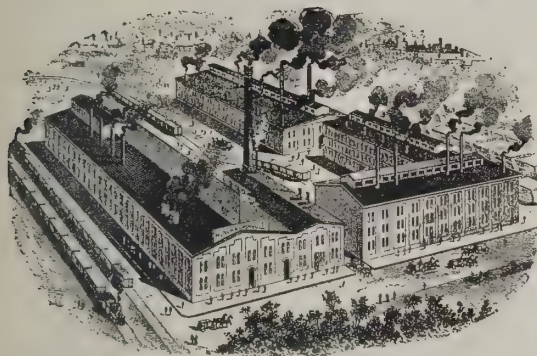
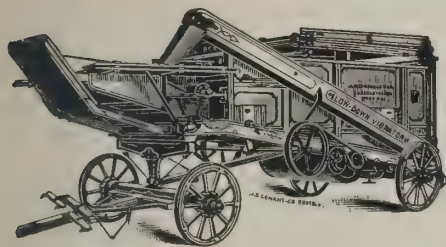
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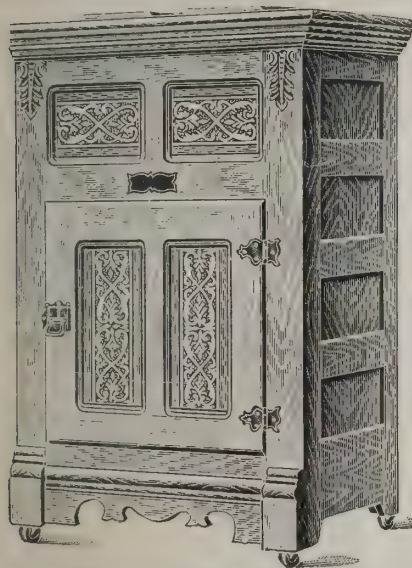
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None but the most skilled mechanics are employed, and none but the highest grade of material enters into the making of our refrigerators.

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Solid Ash; Insulated with Charcoal Sheathing; Patent Adjustable Shelves; Zinc-Lined; Economy in Ice; Perfect Circulation.
Net weight, 150 lbs. Gross weight, 190 lbs.

PRICE, f. o. b. New York, \$13.60.

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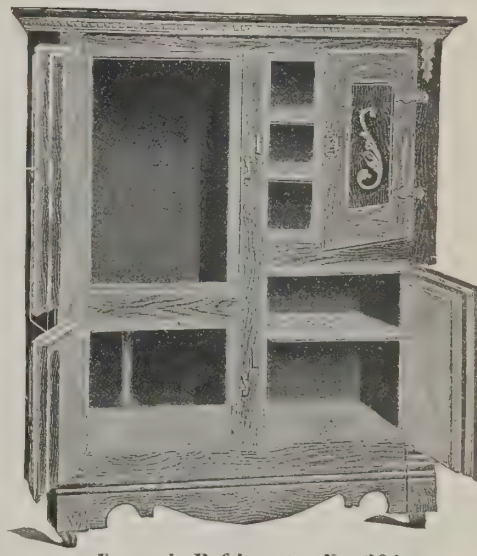
Made with Hardwood, Golden-Oak Finish; Insulated with Charcoal Sheathing.

"The Best Low-Priced Refrigerator on the Market."

Net weight, 150 lbs. Gross weight, 175 lbs.

PRICE, f. o. b. New York, \$9.40.

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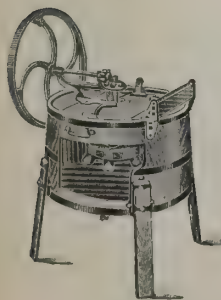
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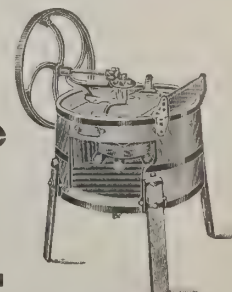
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Just placed upon the foreign and home markets, combines the Latest Improvements in High-Speed, Ball-Bearing Washing Machines and will accomplish all that is claimed for or required of any washing machine, and more.

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America and Germany as World Teachers.

AN interesting and important work on the United States by Wilhelm v. Polenz, entitled "Das Land der Zukunft," has just appeared, and in view of the World's Fair, which the United States is to hold, nothing could have been more timely. He says:

"The most noteworthy surprise of the New World is that every one with the power of discovery that goes thither is able to discover it anew, but no one is competent to write concerning the United States only those whose critical sense has been saturated by the powerful impressions of that wonderland. I have found that we are never so proud as when making a journey, but I have also noticed that our survey of the weakness of German life can never be so well impressed upon us as when we compare ourselves with another strong nation.

"It has become the fashion to wonder at American institutions and to consider them worthy of imitation, but it would be most unwise for us thoughtlessly to incorporate the American nature into our own life. That this young nation across the ocean should give birth to freer customs and more up-to-date accommodations than Europe in its narrowed sphere is natural, but it is as impossible to Americanize Europe as it would be to bring the United States to look at things from the standpoint of Europe. It is one thing to become absorbed into a strange people without resistance, as the German often does, to his harm, and another to endeavor to be just in regard to them. Boundless wonder should not seize us in regarding the United States, and in opposition to the 'unbounded possibilities' should be placed the saying of the Germans, 'Care will be taken that the trees do not grow to the heavens.'

"No extra European nation has made such progress in all lines as has the United States. With no country have we had such traffic as with the United States. There are no two other nations which could learn more from each other, nor do any two nations so thoroughly fail to understand each other. Gigantic is the only word with which to measure the traffic between the shores of the two countries. The two peoples may touch each other outwardly in a hundred ways, but their souls do not meet. The rôles have been changed. Whereas, formerly, at least for a very long period of time, European influence was the dominant one in civilization, Europeanizing all people that it touched, to-day it is the United States that is Americanizing everything, even Europe. With no nation on earth has the empire had closer relations than with the United States, particularly since 1870."

Novel Experiment in Technical Education.

AMERICAN educators are always alert in adding new features to their methods, but the latest is a decided novelty. An experiment in mining education is to be tried this summer under the joint direction of four universities. It is proposed that the senior mining students of these institutions, and possibly a fifth, shall hold a joint summer session for the study of practical mining and mine engineering this summer in one of the mining districts of the State of Colorado.

The students will go into camp at a mine to be leased for the purpose, a small force of skilled miners will be employed as instructors, and the students will engage in actual mining operations, sinking shafts, driving levels, stoping ore, timbering and similar practical work, and will make underground surveys, take samples from the ore bodies, make assay plans and undertake other work of an engineering character. The conduct of the Summer School is to be in the hands of an Executive Committee consisting of college professors.

Summer schools of this character have for the past twenty or twenty-five years formed an important part of the regular work at the leading mining schools in the country. These summer sessions have been held in turn in various mining districts and at various mines, where the students have been received by the courtesy of the mine management. It is felt, however, by the professors in charge of these summer schools that this has become a serious tax on the kindness and good-will of the mining companies, and at the same time it has not been possible, without seriously interfering with the routine work of the mines, to carry out certain details of instruction as fully and completely as might be wished.

The proposed plan of leasing and operating a mine for the instruction of students will increase largely the cost of the summer schools. It is believed, however, that the gain in efficiency will fully warrant the increased expense. George Crocker, through John Hays Hammond, has offered to pay the cost of the school this summer, and has placed \$12,000 for this purpose in the hands of Mr. Hammond and the presidents of the four institutions named, who will act as trustees of the fund.

Workmen All Blind in This Factory.

THERE is a curious carpet, broom and chair-bottom factory in Philadelphia, U. S. A., which, if you entered it at 5.30 on a winter evening, you would find running full blast in total darkness. You would hear men running about, shouting orders, carrying goods or singing and laughing to the rattle and whirr of fast looms and other machinery, yet you might not be able to see your hand held a foot from your face. The explanation is this: No light is needed, for only blind men are employed. The owner is blind, the superintendent is blind, and so are the bookkeeper, machinists, clerks and the 125 workmen. Six of these have neither sight, hearing nor speech. Only two or three men with sight are employed to look after the choosing of colors and do other occasional overseeing work in the broom department.

Here is a remarkable condition of affairs, yet this factory does a business of over \$100,000 a year.

The enterprise was founded by H. L. Hall, himself blind, and who still conducts it. Finding that, owing to the lack of organization, it was impossible for blind men to make a living at the trades they were taught in the institutions, the raw materials alone costing them more than they could get for their brooms and chair bottoms or carpets, he set about to organize the trade himself. Now he is crowded for room, and has a waiting list of 100, all of whom are blind. Mr. Hall sits all day at his desk, a telephone beside him, a clerk at his elbow. Every detail of the work he has at his fingers' ends, every employee is known to him personally.

American Methods and Machinery.

ACCORDING to United States Consul Harris, at Manheim, Germany, a query frequently raised by the German press is how American manufacturers paying wages at least twice as high as are paid in Germany are able, in many cases, to produce their wares cheaper than they can be produced in that country. Consul Harris offers these observations in discussing the matter:

"The solution of this question is certainly before the German manufacturer as never before. He sees that the cheaper raw material and boundless natural resources of the United States furnish only a partial answer, and that the real solution is to be found in a manufacturing system that rejects traditional methods—a system the keynote of which is to lessen the cost of production; that consigns a machine to the scrap pile as soon as a better one is to be had, and in turn consigns that one to the scrap pile when occasion demands—a system that offers a constant incentive to each man connected with the manufacturing plant to bring out the best that is in him.

"The advantages of such a system have been again and again referred to by the German press during the past year. It will undoubtedly be the standard toward which, in the future, the German manufacturer in all lines will strive. He has already accomplished much in this direction. How rapidly and to what extent he may further advance remains to be seen. Whatever change or scope or method may occur in the future of German manufacturing, without question the United States will be the model whose methods will be chiefly studied and whose machinery will continue most in demand.

"American manufacturers should be able to show that their machinery offered for sale embodies the latest improvements. If the fact can be demonstrated by actual experience that certain classes of machinery cheapen the cost of production 15, 25 or 50 per cent. over other machinery now in use, that fact will more than ever before commend such machinery in this market. The exact conditions as to skill of workmen, hours of labor, etc., under which such reductions of cost are made should be clearly stated, but not overstated.

"Farm machinery is rapidly taking the place of hand implements. In a small area of southwestern Germany the number of American farm implements sold each year runs well up into the thousands, showing how the scythe and the sickle are giving way to the mower and the harvester. Modern creamery appliances have gone into every cattle-raising locality. Woodworking and ironworking machinery are forcing handwork to the rear. Hotel elevators—scarcely to be found at all a few years ago—are now used in all the better German hotels. It is but a few years since large apartment houses, with handsome stone fronts, had neither steam heat nor modern sanitary plumbing. Now all such houses are supplied with both."

Consul Harris adds: "These changes suggest that Germany will continue to be an appreciative market for labor-saving machinery and for office, store and household furniture of such types as are likely to find favor in the United States. They suggest also that the German manufacturer will have a home market similar to our own to stimulate him to greater excellence and make him a still more formidable rival in the open markets of the world."

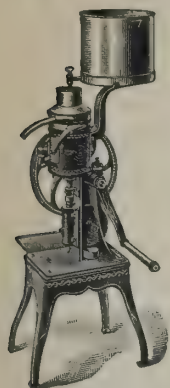
Germany's Friendship for the United States.

FOR reasons not easy to understand, a section of the American press has shown an increasing disposition in recent years to seize upon and magnify everything that might be construed as an act of unfriendliness toward this country on the part of Germany, whereas the events and happenings that have a marked tendency in the opposite direction are studiously ignored. The German Emperor has never, in fact, failed to make the most of every opportunity to manifest a cordial feeling toward the American people, and there is no good reason to suppose he has ever entertained any other—*Leslie's Weekly*.

"The American Girl."—The Geo. L. Squier Manufacturing Company, of Buffalo, U. S. A., have just received from one of the most artistic lithographing houses in the country an elegant reproduction entitled "The American Girl," size 15x20 inches, and the work is executed in fourteen colors. Art connoisseurs have pronounced it one of the handsomest subjects ever produced. A copy will be mailed free, substantially packed in a large, heavy mailing tube, to all plantation owners who may make application for same.

Agricultural Growth of the United States.—The total value of farm property in the United States in 1900 was more than five times as great as in 1850 and 28.4 per cent. greater than in 1890. It was largely due to the excellence of the agricultural implements manufactured in America.

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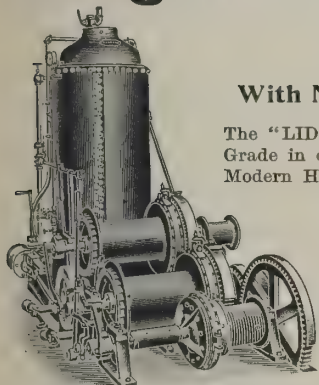
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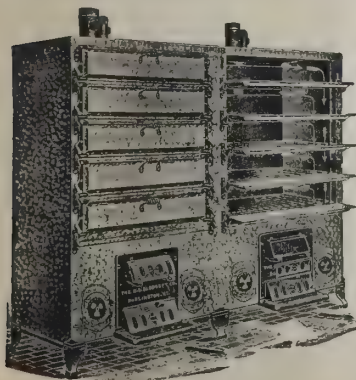
Rope wheels, all sizes.

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Portable Galvanized Iron Ovens.



Portable Oven No. 119, with one side open.

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Either Coal, Wood, Natural or Artificial Gas can be utilized as Fuel. Used by Bakers, Hotels, Steamships, Restaurants, Confectioners, Colleges, Asylums, Private Residences and in Japanning, Enameling and Core Baking.

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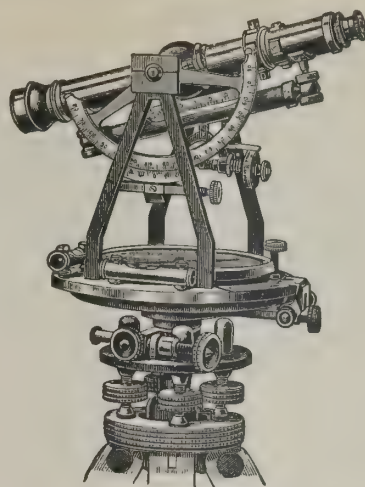
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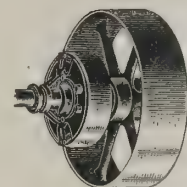
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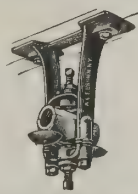
Machine Moulded and Cut Gears.

Power Transmitting Machinery.



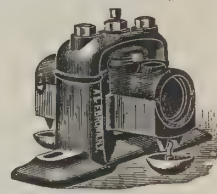
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Patent Self-oiling Adjustable Hanger. Write for catalogue.

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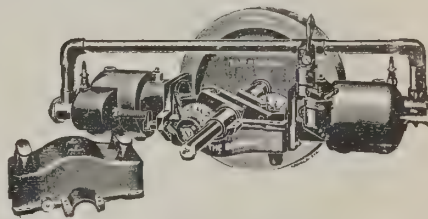
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The most interesting kitchen utensil ever invented. It slices every kind of fruit or vegetable into an infinite variety of unique and fancy designs, making an entirely new, novel and delicious product.

Is invaluable for making delicate salads, garnishings, etc. Makes Juliennes ten times as fast as by the ordinary method and is the only utensil that will produce Lattice Potatoes. Is extremely simple to operate and sells rapidly wherever shown.

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JULIENNES

LATTICE POTATOES

Some Features of the Shoe Industry.

THE boot and shoe industry in America has been making strides, and the manufacturers engaged in it are of the right sort of American merchants. It is not our custom to admit to these columns anything derogatory of the methods of other countries, but the following from the *Shoe and Leather Gazette* contains in that respect only what other trade journals throughout the world have printed, and does add some information showing what our American shoemakers are doing:

"This country may not claim to be fully up to the Utopian standard, but occasionally a comparison is offered which should make us pretty well satisfied of the fact that it might be worse as a place for human beings to live and work. The celebrated 'solid shoe' case recently tried in England offers in its details a striking picture of conditions in that country which could hardly be paralleled here. The shoes in controversy were ladies' shoes, made to sell at retail at about 80 cents a pair. They were not made of frankly coarse and cheap heavy leather, but of a 'shabby genteel' sort, with pasteboard insoles that one step in a wet place would ruin. It is stated that such shoes are made and sold by thousands in England to a class of people who never seem to be able to get money enough together to buy better ones.

"Contrast such a state of affairs with the conditions prevailing in American towns, where the average price per pair for shoes has been climbing for several years. Our traveling staff correspondent mentions one firm that runs a \$3.50 store, whose greatest difficulty is in persuading people to be content to pay that small amount for a pair of shoes. In the same city are stores that have a line of trade that buys \$8 and \$10 shoes, the firm selling more of these grades than of all others. No, this country may have imperfections, and it may be run in a haphazard sort of way, but for people whose working ability is their only excuse for living it is about as comfortable a place as there is visible."

Our contemporary treats the matter in a way that is more interesting from a domestic standpoint than otherwise, but the fact will be appreciated by purchasers of shoes in other countries. American shoe manufacturers now produce goods that cannot be excelled anywhere in the world for the price charged, and we look to see our export trade in this commodity increase greatly in the future.

American Shoe Machinery in France.

UNITED STATES COMMERCIAL AGENT GRIFFIN, at Limoges, France, sends the following interesting news to the State Department, Washington: "The United States still leads in the manufacture of shoes and shoe machinery. The best leather, machinery, threads and all other furnishings for shoemaking are imported from the United States. It is surprising to notice the gradual change that is taking place in shoe shapes. The striking peculiarities that characterized French shoes ten years ago are rapidly disappearing and American shapes are now found everywhere. The model lasts are imported in large quantities from Massachusetts, U. S. A., and are extensively copied throughout France.

"The largest shoe factory in France uses only American machinery. The growth of this manufactory is phenomenal. Before the Paris Exposition of 1900 this factory was a very small one, employing only French machinery. Since then it has increased until it is now the largest in the Republic. The American shoe machinery exhibited at the 1900 exposition at Paris was bought in block by this firm, and to-day its annual sales run up into the millions of francs. Two enormous new buildings have been erected within two years and more than 1,000 hands are constantly employed. There are six large factories making shoes in Limoges that now use American machinery, and many other like factories are being started in other parts of France to be furnished with American machinery also."

New Apparatus for Fighting Fires.

THE chief of the Schenectady (U. S. A.) Fire Department is the inventor of a new piece of fire-fighting apparatus, which will soon be put to the test in that city. A local paper describes it as a fire boat on wheels. It consists of a big monitor, such as is used on board the fire boats of the large American cities, but in this case it is mounted on two wheels, so that it can be pushed wherever it may be desired by a couple of men. The nozzle has the additional feature that a curtain or shield of water is projected therefrom in all directions, making a perfect envelope around the firemen who may occasionally be compelled to go to the machine and direct its operations. As a rule, however, after it has been placed properly it needs attention only once in a while, when the direction of the stream has to be changed.

American Rails for Turkey.—An American steel company has been awarded the contract for 20,000 tons of steel rails, fish plates and bolts for the Hedjaz Railway. These rails will lay about 600 miles of the new railway from Haifa to Mecca in the Turkish Empire.

American Typewriters in Demand.—The export trade in typewriters in 1903 amounted to \$4,537,396, an increase of nearly \$1,000,000 over the previous year, which indicates that our products in this line are becoming more and more appreciated abroad.

Illuminating the Passage of Projectiles.

PERSONS on vessels passing Sandy Hook, which is the sentinel of New York harbor, have been puzzled at night by what looked like balls of fire darting out from the shore. The brilliant projectiles, chasing each other over the water at a terrific rate, resembled monster rockets. The explanation of the phenomenon is found in the fact that the United States army officers at the Sandy Hook proving grounds were experimenting with a device invented to enable gunners to watch the flight of a projectile from a gun at night.

Some months ago there were tests of this chaser at Sandy Hook, but since then the inventor has materially improved his device. It consists of a chemical combination, much like that which forms the basis of night fireworks, and is enclosed in a brass box that is screwed into the rear end of the projectile. When the gun is fired the forming gases ignite this material which burns brightly, leaving a brilliant line of fire as the projectile flies through the air.

The idea is that the artillerymen will be able to see what they are firing at, or, at least, what the projectile hits. The United States Navy has experimented with similar schemes. The chaser, as it is called, is understood to be intended principally for rapid-fire guns, whose function it is to guard against attacks of torpedo boats. The attachment does not interfere in any way with the firing of a gun.

America Feeds Far East Combatants.

THE provision trade journals report heavy demands upon the great meat dressing and provision packing firms of the United States for supplies to sustain the warring armies in the Far East. They say that previous to the actual outbreak of hostilities negotiations for the purchase of American provisions were on an enormous scale, and that it is estimated that shipments of mess and corned beef from American centers on concluded contracts for Russian account approximated, down to the middle of February, 7,000,000 pounds.

The same journals also say that the impression, widely entertained, that the Japanese soldiers subsist on a cereal diet, must be erroneous, because of the ordering by Japan of 7,000,000 pounds of meats from the packing houses of this country.

The further "rush" demand from Russian agents for 5,000,000 pounds of dressed American meats for immediate delivery at the port of San Francisco, on the American Pacific Coast, indicates that, should the present war prove prolonged, this country will have a market for all the meat it can spare during the war's continuance.

New Style of Umbrella Protects Body and Legs.

A NOVELTY in umbrellas, which the *American Inventor* has named "the awning umbrella," has recently come out in the United States. It is intended not only to protect the upper part of the body, but, in addition to performing the usual service of an umbrella, is designed to shield the trunk and legs as well. A curtain is suspended from the ribs of the umbrella, and it may be detached therefrom at will. Two slits in the awning are connected by an apron, thus affording shelter for the back. There is an aperture through which the wearer may pick his steps. The umbrella can be closed without removing the under structure, which may be fastened on the tops of the ribs.

Big Engineering Feat of Two Young Americans.—Two young Americans, 23 years of age, and house-movers by trade, have just accomplished an extraordinary feat of engineering. They have successfully moved a 300,000-pound steel oil tank down a steep hill to the Allegheny River, transported it a mile down the river on barges and placed it on a bank 200 feet high. The monster tank was sunk seven feet in the ground, and had to be raised before it could be moved forward an inch. The five tracks of a railroad had to be crossed, and the railroad company gave the movers only forty minutes' time to get from one side to the other. This is said by an authority on the subject to have been one of the greatest tasks ever accomplished by any house-mover. The work was done by twenty-four men and two horses in six weeks.

New Automobile Fuel.—The Brooklyn *Eagle* announces that a new odorless automobile fuel, which is said to be of 80 per cent. greater energy than gasoline, will be placed on the American market in a short time under the name of energine. They hope to bring about the solution of the problem of obtaining a high-power fuel without any objectionable odor. The new company is about to erect a factory in Cleveland, in which it will refine from the crude petroleum a product to be known as energine. This has already been tested by a number of automobile manufacturers, and, it is said, was found to bear out to the fullest extent the claim of the originators as an odorless fuel. It is claimed that one gallon of this new fuel will carry a heavy touring car eighteen miles, while the same quantity of gasoline will carry the same car only ten miles.

Demand for American Peg-making Machinery.—United States Consul F. D. Chester, of Budapest, Hungary, reports that the Commercial Museum in that city desires a list of American manufacturers and exporters of wooden peg-making machines. The demand for these machines for export is increasing.

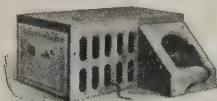
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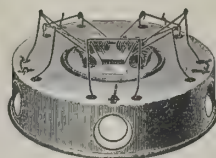
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Mouse Trap.
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"Stop-Thief" Trap,
4 sizes.
For catching small fur-
bearing animals.



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Self-Setting Wood
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Extra heavy.
Well made.



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"DOES THE WORK OF TWENTY MEN."

WINNER OF GOVERNMENT SPRAYING CONTEST. Awarded Gold Medal at Pan-American Exhibition, at Buffalo, N. Y. Highest Award at Toronto, London, Ottawa, Halifax and Glasgow. Over one hundred Highest Awards throughout the world have been granted to the SPRAMOTOR. The Spramotor has been adopted by the Russian, Canadian, Belgian and New Zealand Governments, as well as in the Experimental Stations of Ontario, Manitoba, Quebec, Nova Scotia, British Columbia and many of the States within the United States of America.

NOTE.—The prices quoted, U. S. gold or its equivalent, are for Export only, include boxing, ready for transportation abroad, and delivered f. o. b. cars at New York City.

Spramotor No. 0, Outfit G, with ten feet of hose, hand valve and eight-foot iron extension pipe, patent drip guard and one Spramotor nozzle. Gross weight, 22½ pounds; net weight, 41 pounds; boxed, 12x12x34 inches. Price, complete.....

\$ 8.00

Spramotor No. 0, Outfit G, price per dozen.....

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Spramotor No. 1, as illustrated, with ten feet of hose, patent hand valve, eight-foot iron extension rod, drip guard and painting nozzle, barrel and screen. Gross weight, 157 pounds; net weight, 65½ pounds. All appliances, as shown, are packed within the barrel; 24x24x34 inches. Price, complete.....

15.00

Spramotor No. 1, price per dozen.....

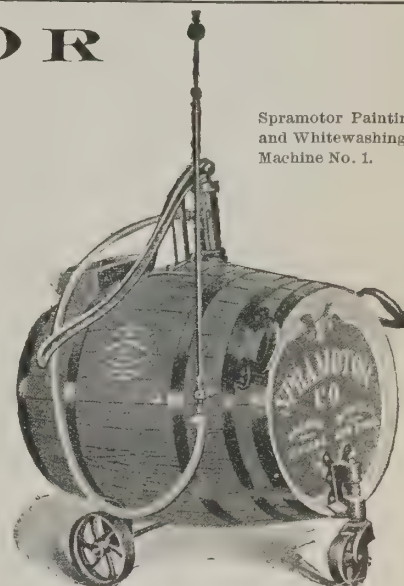
166.32

These machines will apply any kind of COLD WATER or OIL PAINT.

SPRAPINT, a Paint in DRY-POWDER FORM, only requiring the addition of cold water for instant use. Specify "Spramotor" and "Sprapaint" when ordering. For INTERIOR use (white), in 400-pound barrels, price per ton, \$42.00. For EXTERIOR..... 90.00.

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French design, made in Tabasco mahogany, exceedingly fine finish. This table is recommended to all who admire elegant creations in the furniture line. Best quality genuine rubber cushions, Vermont slate bed, fine imported billiard cloth. Equipment includes our PAT-

ENT POCKET COVERS, which make this table equally as good for BILLIARDS as for POOL. 6 fancy hand-made cues, highly polished, imported butts; 4 GENUINE IVORY BILLIARD BALLS and a set of 16 POOL BALLS accompany each table. Size of playing surface, 3x6 feet. **Price, complete, \$64.** In U. S. Gold or its equivalent, delivered f. o. b. New York. Weight, boxed, 700 lbs. (317.5 kilos); 29 cubic feet (822 cubic decimeters).

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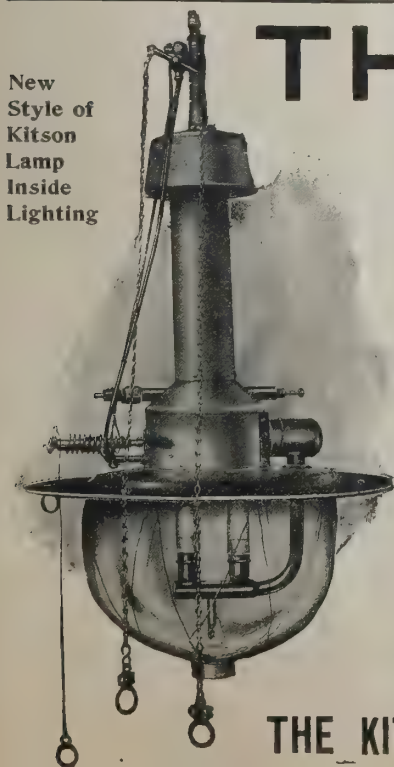
This system of lighting is applicable for all purposes. For the illumination of streets, factories, halls, churches and private houses. We have over twenty different types of lamps.

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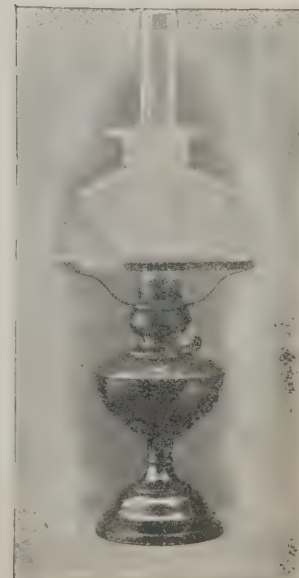
SPECIAL NOTICE.—We are the only legally authorized Export Agents of the Kitson Light, appointed by the Inventor and Patentee.

All correspondence should be addressed to

THE KITSON LIGHT FOREIGN SUPPLY CO., Willesden Junction,
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New
Style of
Kitson
Lamp
Inside
Lighting



The Domestic
Incandescent Oil Lamp.

Largest Frog-Leg Market in the World.

IN two adjoining American cities is located the largest frog-leg market in the world. Frogs are found in other States than Minnesota, but nowhere else in the United States has the industry achieved such proportions as in the region surrounding the twin cities of St. Paul and Minneapolis, in the State just mentioned. The total receipts last year from the frog catchers of the State exceeded 500,000 dozen, requiring the slaughter of no less than 5,000,000 frogs. Five years ago no frogs were shipped out of Minnesota. Now the business amounts to upward of \$100,000 a year. Minnesota caught frogs are in great demand in New York and other prominent cities, and the demand is constantly increasing. It is expected that the industry will spread to the export trade and American frog legs are likely soon to be shipped to France and other countries where the delicacy is appreciated.

The frog catchers are located near the smaller lakes throughout the State. They know all the characteristics of the frog, where to find him, how to catch him and where he nests. The heaviest catches are in the fall and spring. The frogs breed very fast, and as it only requires a couple of months for them to attain their full size it is almost impossible to exhaust the supply. Unlike oysters, there is a good demand for frog legs all the year round, and it is necessary to hunt them in the winter time when the ground is frozen to the depth of 2 or 3 feet and the ice covers the ponds to the thickness of 24 to 36 inches. But with all these drawbacks it is not difficult for those engaged in it to gather in \$10 a day at this occupation. When the frogs take to the water in the fall the professional frog catcher watches them and learns where they nest. He waits until the prices are higher in the winter and cuts the ice over this nest, scooping out great nests of frogs. As many as 500 to 1,000 can be secured in one of these nests in good seasons. This keeps up the supply the year round and makes the market a steady one, comparatively.

The frog legs are all shipped by express, packed in ice. In the cold-storage houses in the chief cities there are frog legs held as a reserve emergency, the dealers often being called upon to supply an unusually large amount for banquets or other entertainments.

Great Claims Made for a New Motor.

PARTICULARS published in the New York *Herald* of a new motor that will increase the speed of ocean steamships have been read with much interest in America, where the general impression is that such speed cannot be greatly increased without a sacrifice of safety. The motor was invented by Peter Thornley, a Burton-on-Trent engineer, and the *Herald* says of it: "The invention is considered of such importance that its development may result in express railway engines running at twice their present speed at only half the cost and in Atlantic liners crossing from Liverpool to New York in three days.

"The invention is almost small enough to be carried in a typewriter case and so compact that everything is inclosed except the driving wheels. The new motor is capable of developing 1,500 revolutions a minute, giving 15 horse-power under a boiler pressure of 200 pounds to the square inch. In even the best railway locomotive the steam is admitted after the piston has moved from 5 to 8 inches along the cylinder, thus forming a vacuum of several hundred cubic inches in extent to be filled before an ounce of power is exerted.

"Mr. Thornley has devised a valve which will admit a given quantity of steam at every commencement of the stroke and so nicely adjusted that the expansive force of the steam admitted is just sufficient to drive the piston at the end of its journey. By the most modest estimate the saving in coal is 25 per cent., while the simplicity of the motor is such that the initial cost is much cheaper than existing types. It is actually claimed that one ton of coal will produce as much power as eight tons with existing types. It can be worked just as well with compressed air as with steam."

Waterproof Fabrics in Considerable Demand.

MANUFACTURERS of waterproof fabrics in America have found a greatly increased demand at home and abroad for their cloths.

Americans who used to be content to carry umbrellas to keep the rain off of part of their attire in inclement weather now insist on having further protection, and no thoroughly clothed American now depends upon umbrellas alone for protection. There are various kinds of waterproof cloth, aside from the rubber that is used in rubber coats.

Rubber coats are still recognized as absolutely rainproof, but the trade finds the demand to be for something not so warm and uncomfortable, but equally impervious to rain. Some manufacturers take a cotton fabric, stamp it on one side with a fast print and coat the other side with a thin preparation of rubber. This cloth is being used considerably for women in cloakings. Wool fabrics, of course, are the goods usually selected for the waterproofing process. The shrinkage of wool makes it to some extent waterproof, as shown in the Irish friezes, which, when of good quality, will shed water for a considerable time.

The vogue of the waterproof class of goods has led to some novelties, such as the manufacture of mercerized cotton fabrics in color designs similar to those of cravenette and other waterproof cloths. One mill has turned out a line of mercerized fabrics that is adapted for waterproofing, and the results are declared to be highly satisfactory. The goods may be used without water-

proofing and closely resemble cravenette in appearance. There are black and white, tan and white, green and white and blue and white mixtures in this line. There are also overchecks, and it is expected that there will be quite a run on these goods for women's cloaks and suitings. In men's wear about the only use for the waterproof cloths is in overcoats, but women find the materials serviceable for coats, cloaks, suitings and skirts.

Wealth and Commerce of the World.

SOME very interesting information is contained in a statement issued last month by the United States Department of Commerce and Labor through its Bureau of Statistics covering the area, population, commerce, revenue, expenditures, indebtedness, currency and stocks of money of the principal countries of the world. From it we learn that the total exports of the countries and colonies of the civilized world are \$10,278,616,000 and the total imports \$11,525,755,000, making the aggregate commerce \$21,804,391,000. The aggregate of the world's commerce at the present time may therefore be set down, in round figures as \$22,000,000,000. While, presumably, all exports become, in turn, imports, the stated value of these imports exceeds by more than \$1,000,000,000 the stated value of the merchandise in question when stated as exports. This increased value is accounted for in part by the value added through transportation, insurance, etc.

The population of the countries and colonies included in this statement is given at 1,487,159,000 and their area at 40,701,936 square miles. This figure of population in the countries included in the table seems to justify an estimate of 1,600,000,000 as the approximate total of the world's population at the present time. The total revenue for the latest available date of the countries and colonies included in the list is set down at \$7,854,301,000 and the total expenditures at \$7,939,540,000.

The total indebtedness of the countries named in the list is given at \$34,389,604,970; but as the statement does not include the indebtedness of certain minor colonies and divisions, the total national indebtedness of the world at the present time may safely be put, in round terms, at \$35,000,000,000. The interest charge on the public debt of the countries named is given at \$1,416,397,448.

The stocks of money in the countries named are stated at \$11,999,300,000, or, in round numbers, \$12,000,000,000, but in this statement the value of the monetary stock of silver standard countries has not been changed to conform to the decline in silver values.

Invention That Spreads Daylight.

AS American cities become more densely populated and the land increases in value, the buildings of necessity are built higher and higher. New York, as a writer in *The World's Work* puts it, has passed through the five, ten, fifteen and twenty story stages, and has now reached the point where the cliff dwellings and places of business tower thirty stories above the chasm-like streets. The thoroughfares of modern cities in the congested business districts are so hemmed in by the mountainous buildings that the direct sun shines on them only at midday.

There is a constant struggle for daylight among builders; light-wells faced with white enameled bricks have sunk through story after story at great cost of space and money, and windows drink in the unsullied light of the sun greedily. Daylight is an asset, and buildings or rooms commanding it may be rented at an increased price.

The workers in many an office in every great city are compelled to work under an artificial light all day long, and the number of rooms where people have to light the gas to dress even in summer, and where the blessed sunlight comes in meager gray streaks, are beyond counting.

As long as men crowd together in order to do business conveniently and build their dwellings so as to be near their offices, just so long will the congestion continue, tall buildings be erected and the struggle for daylight go on. To meet this condition an American has invented a system of prisms, which reflect the light in such a way as to greatly increase the amount of daylight suffused through buildings. These prisms act like a myriad of mirrors that catch the perpendicular rays and turn them horizontally into the room.

American Style of Ventilation of Theaters.

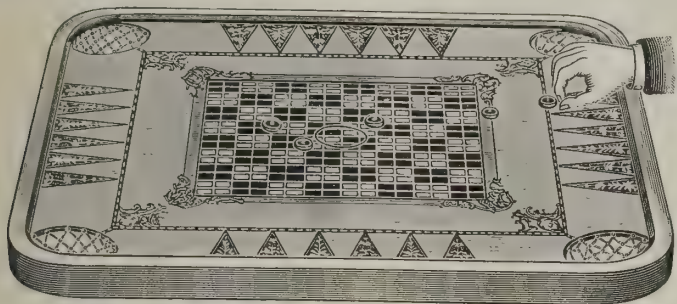
THE ventilation and heating of theaters is a problem not easily mastered by ordinary heating engineers. In a crowded auditorium of this kind ventilation is the all-important question. It may be a simple matter to heat the building to a required temperature, but to maintain a constant temperature and a pure atmosphere is not so easily accomplished. Fresh air to breathe must be supplied constantly to the occupants and the impure air must be removed. Evidently a system giving a forced circulation of air is necessary to meet these requirements. A good example of this system is the recent installation in the New Franklin Square Theater, at Worcester, Mass., U. S. A. The heating and ventilating apparatus consists of an electrically driven fan and heating coils located in the basement. By means of an exhaust fan and blowers fresh air is drawn from the outside and forced through coils of steam heated pipes and then through ducts to the desired parts of the theater. The foul air is carried out through the dome and roof of the theater by means of an electric exhaust fan.

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NOTE.—Each Game Board measures twenty-nine (29) inches square (53.16 centimeters); one dozen Game Boards, boxed for export, weigh 206 pounds (96.4 kilos, 13.76 cubic feet (0.3896 cubic meters).

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Our illustrated catalogue, printed in colors, showing the various styles of Game Boards made by us, mailed postpaid. We will also forward, postpaid, our catalogue, illustrating and describing our many styles of **COMBINATION LIBRARY, DINING, BILLIARD** and **POOL TABLES**. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us a duplicate of order.

When visiting the **WORLD'S EXPOSITION** at St. Louis during 1904 see our Exhibit in the Manufacturers' Building, showing our entire line of **GAME BOARDS** and **COMBINATION LIBRARY, DINING, POOL and BILLIARD TABLES**.

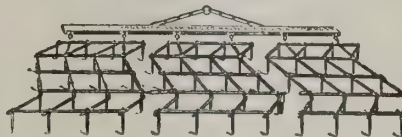
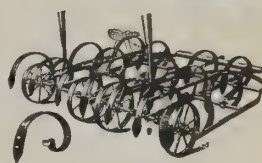
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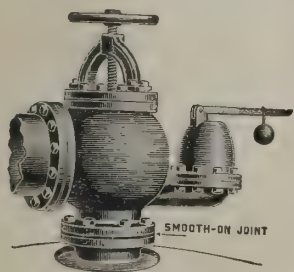
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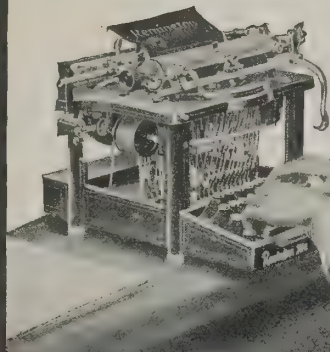
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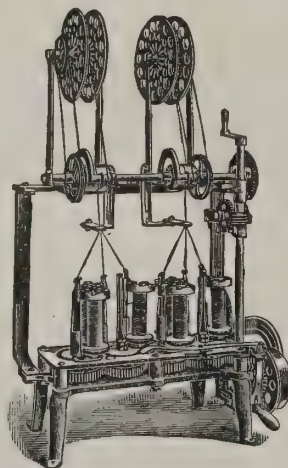
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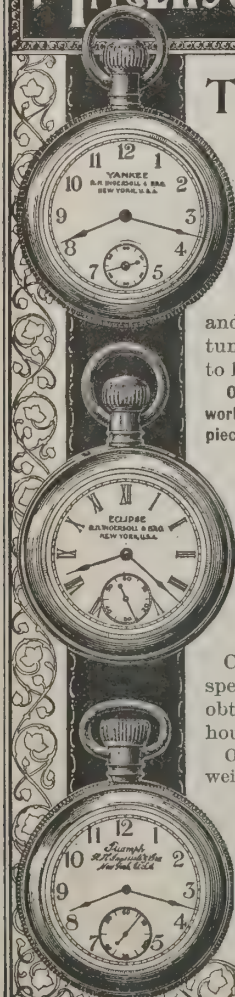
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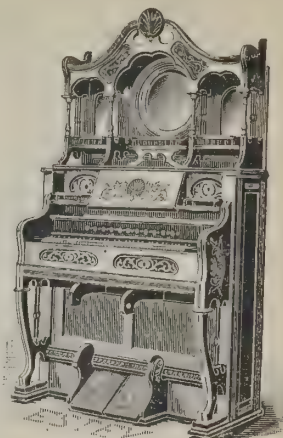
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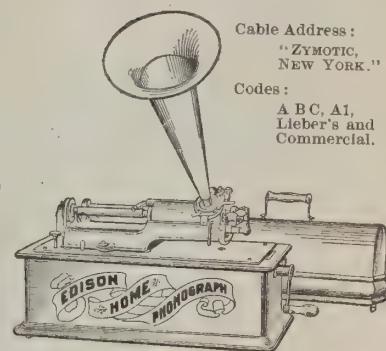
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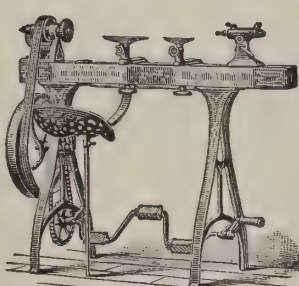
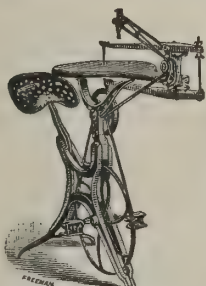
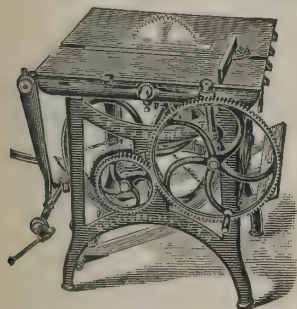
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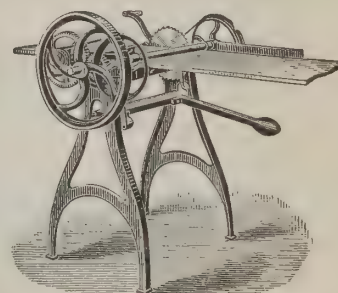
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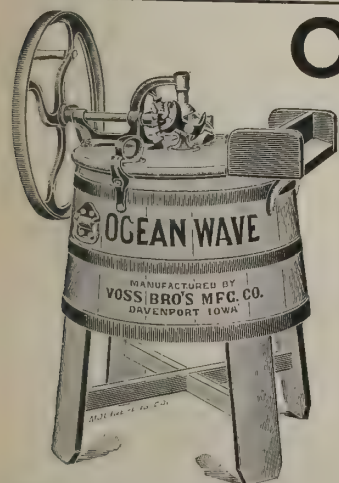
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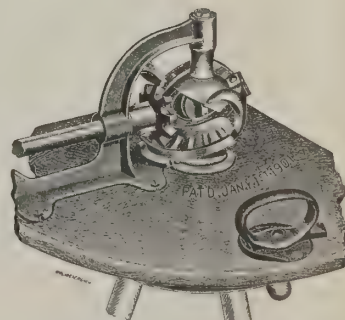
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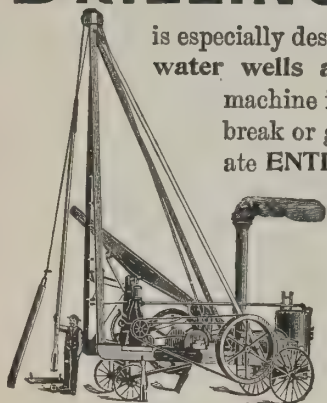
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THE PORTABLE STAR DRILLING MACHINE



is especially designed for drilling oil or gas wells, water wells and mineral prospecting. Every machine is complete, and is so built as not to break or get out of order, being made to operate ENTIRELY WITHOUT SPRINGS.

F. S. Gilbert, Cleveland, Ohio, writes: "I have frequently drilled 100 feet in 24 hours with my Star. It will doubtless make possible, in time, the cultivation of the arid western desert."

John Calkins, Newton Falls, Ohio, writes: "Have two of your Star Drilling Machines, and they take the lead of all others. I have drilled 76 ft. in 10 hours, 64 ft. of it in rock."

**Star Drilling Machines are made in Ten Sizes.
Will Drill 250 to 2500 Feet.**

They are the very best machines on the market. We also manufacture Drilling and Fishing Tools.

Send for our illustrated catalogue.

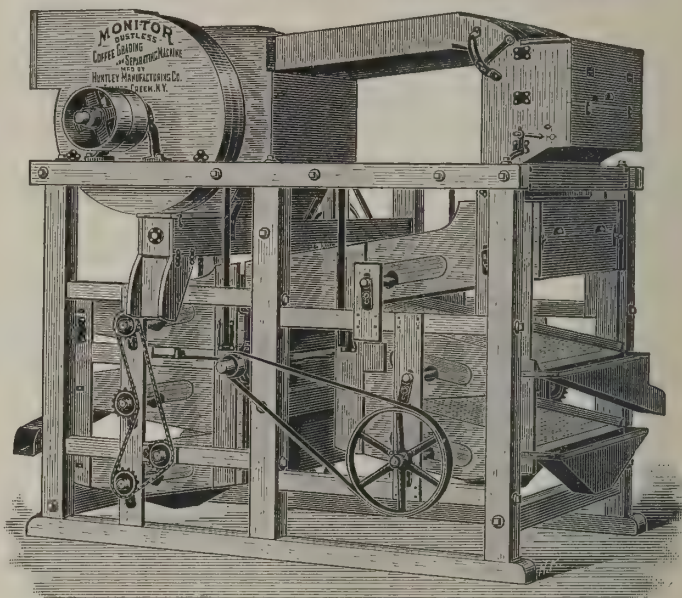
**STAR DRILLING MACHINE CO.
Akron, Ohio, U. S. A.**

Cable Address:
"STARDRILL."

Use "A-B-C Code, 4th Edition,"
or "Universal Code of Lieber."

The Perfect Coffee Classifier.

MONITOR COFFEE SEPARATOR AND GRADER.



This machine removes all foul material and fragments, makes clean separations and grades perfectly in five sizes: Large, medium and small flats, large and small peaberry.

Made in five sizes, and capacities from 6 to 30 bags per hour.

Monitor Rice Separators are used more extensively in the rice industry than any other make of machine.

Monitor Grain, Cereal and Seed Cleaners are unequalled for quantity and superiority of work and low operating expense.

Send to-day for our Illustrated Catalogue of the entire Monitor line, with export prices F. O. B. steamship, New York City.

HUNTLEY MFG. CO., Silver Creek, N. Y., U. S. A.

The Standard Fans.



Style B Fan with Regulating Switch.

Our Fans are used in all parts of the world. Our experience with foreign requirements enables us to meet all conditions, especially in respect to special insulation. Other strong points are, artistic design, high finish, economy in operation and blade-carrying power.

Recommendations of our customers are our best guarantees.

**CEILING, DESK and BRACKET types, for
all direct-current circuits.**

New twelve-page circular of our Protected Type Dynamos and Motors ready for distribution. Yours for the asking.

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SPRINGFIELD, OHIO, U. S. A.**

Friedman Bros Shoe Co.

ST. LOUIS, U. S. A.

MANUFACTURERS OF

Shoes for Export

TO ALL PARTS OF THE WORLD.

Established 1854.

Before a critical public a half century, the "Friedman Shoe" now, as ever, stands supreme.

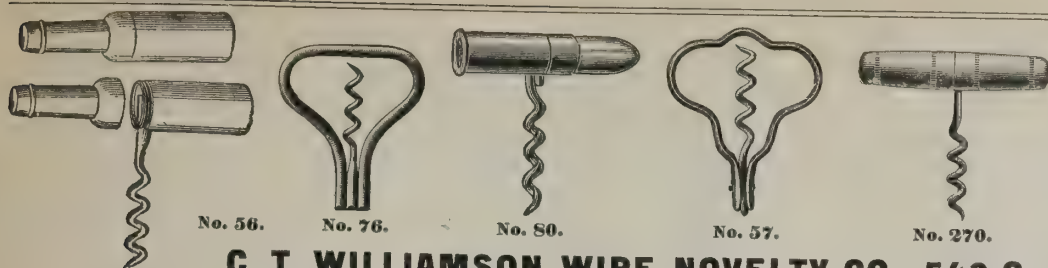
OUR FACILITIES:

Two mammoth electrically equipped factories with a capacity of 10,000 pairs daily; over 100,000 square feet of sales and store rooms; a well-organized foreign department for our export trade exclusively; unexcelled warehouse and shipping capacity.



We solicit trial orders from responsible houses, assuring lowest prices and prompt shipment.

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FOR EXPORT.

OVER 75 VARIETIES.

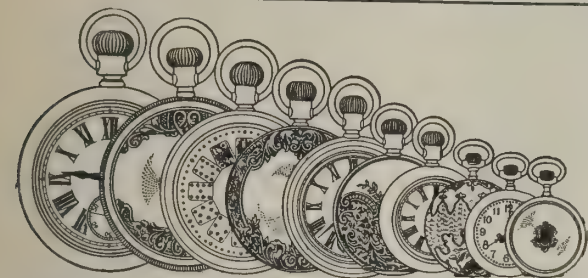
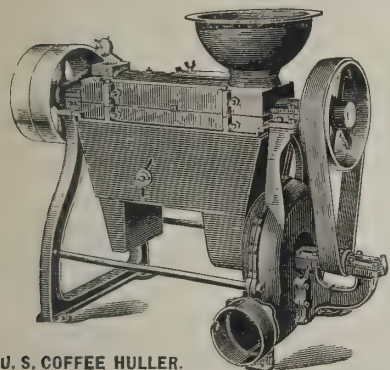
GOODS DELIVERED F. O. B. STEAMER.

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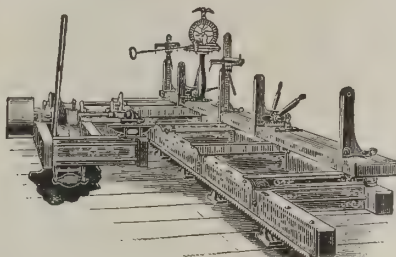
C. T. WILLIAMSON WIRE NOVELTY CO., 542 Camp Street, Newark, N. J., U. S. A.**New England Watches**

have a world-wide reputation and are made to suit all sorts and conditions of people.

Export Catalogue in English, French or Spanish sent on application.

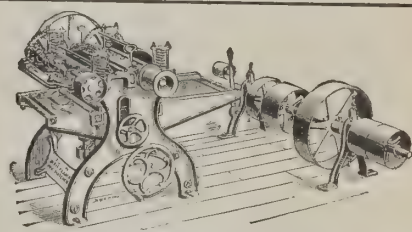
**THE NEW ENGLAND WATCH CO., - Waterbury, Conn., U. S. A.**

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CIRCULAR SAW MILL.

We build a complete line of Machinery for Handling the Coffee Crop, also Large and Small Saw Mills to suit all conditions, and Wood-working Machinery. Write for Catalogue, Spanish or English.

NEW YORK Office, 2 & 4 Stone Street.
P. AUBECK, Mgr.

20-INCH DIXIE PLANER AND MATCHER.

For dressing and tonguing and grooving lumber, such as siding, flooring, ceiling, etc.

SALEM IRON WORKS, Winston-Salem, N. C., U. S. A.**M. S. BENEDICT MFG. CO., Inc., Manufacturers of Finely Tempered Steel Double-tinned Plated Spoons and Forks.**

PLAIN TIPPED PATTERN.—Net Prices f. o. b. Steamer New York City. Per gross.

Ten Spoons, packed 12 gross in case	\$1.00	£0.4.2
Dessert Spoons, " " "	1.80	0.7.6
Table Spoons, " " "	2.00	0.8.4
Medium Forks, " " "	2.30	0.9.7

FANCY PATTERN CHILD SETS.

Child Sets (3 pieces), knife, fork, and spoon, packed each set in lined box, 144 boxes in case, per gross sets. \$8.00 £1.12.0

Tea Spoons, twelve gross, net weight 83 lbs., 36½ kilos; gross weight 90 lbs., 41¼ kilos.

Dessert Spoons, six gross, net weight 64 lbs., 22 kilos; gross weight 70 lbs., 35¼ kilos.

Table Spoons, six gross, net weight 90 lbs., 38¾ kilos; gross weight 97 lbs., 43¾ kilos.

Medium Forks, six gross, net weight 63 lbs., 27¼ kilos; gross weight 69 lbs., 31 kilos.

Child's Set, one gross, net weight 38 lbs., 11½ kilos; gross weight 49 lbs., 21 kilos.

SENT FREE: Our complete illustrated catalogues of Silver-plated Flat-ware, Hollow-ware, Clocks, Novelties, Toilet Sets, Manicure articles, etc. Orders received direct or through export commission houses.

**THE GENUINE****"O.-K." WASHER.**

KNOWN AND IN USE THROUGHOUT THE CIVILIZED WORLD.

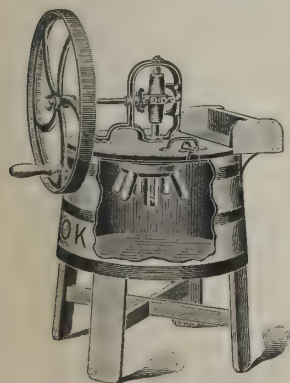
The O. K. is the KING of ROTARY WASHING MACHINES! Because:

1. The O. K. is the only Rotary Washer that has Revolving Steel Ball Gearing, reducing the friction and thus making the machine so light running and almost noiseless.
 2. The tub is made of Louisiana Red Cypress lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside of the tub, as are all of the castings.
 3. The wheel turns right or left, pin-wheel or dasher reverses automatically, turning the clothes back and forth through the hot soap-suds, and cleaning them without rubbing them to pieces.
 4. The O. K. Washer is made by experienced mechanics, and will outlast any other washer on the market.
 5. The tub has a wringer box, fastened with steel brackets.
 6. The lid on tub closes tight, no escape of steam.
 7. Has glided hoops, castings and name.
- Prices quoted F. O. B. New York. Each O. K. Washing Machine, crated, ready for transportation abroad, weighs about ninety (90) pounds, and occupies nine (9) cubic feet.

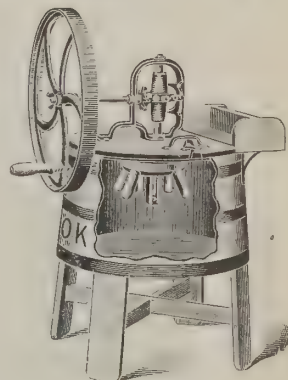
Manufactured Exclusively by

H. F. BRAMMER MFG. CO.,

DAVENPORT IOWA U. S. A.



O. K. WASHER.



O. K. WASHER.

GOULD'S STEAM AND WATER PACKING.

ORIGINAL RING PACKING.

Patented June 1, 1880.—The Original Ring Packing.

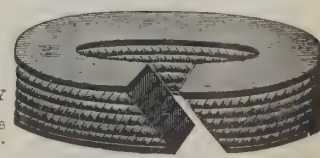
IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM SELF-LUBRICATING, STEAM AND WATER TIGHT.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

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ALBION CHIPMAN, TREAS.

**F. J. FOX, Rochester, N. Y., U. S. A.**

MANUFACTURER AND EXPORTER OF

20 DIFFERENT STYLES.
SIZES 0 to 4.**Infants' Fine Soft-Sole Shoes.**

Orders filled through commission houses. Correspondence solicited.



HAVE YOU SEEN THE

**Schroeder
Rotary
Washer ?**

It is the most perfect and successful Rotary Washer on the market. The tub is made of red Louisiana cypress, which will not fall apart. All castings are finished with rust-proof aluminum paint; all iron parts coming in contact with the clothes are heavily galvanized. We also make other washers. For particulars address

BENBOW-BRAMMER MFG. CO.,Factories: { St. Louis, Mo.
DAVENPORT, IA.

St. Louis, Mo., U. S. A.

BUCKEYE IRON & BRASS WORKS,
DAYTON, OHIO, U. S. A.

MANUFACTURERS OF

**Linseed and Cotton Seed
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Picadura Tobaccos.**HIGH STANDARD BRASS GOODS**

For Engine Builders, Gas and Steam Fitters.

WRITE FOR CATALOGUE.**"NEW JERSEY" COPPER PAINT****A PAINT THAT PROTECTS.****LEADS THEM ALL,**

So Our Testimonials Say.

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition and American Institute, New York City.

New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

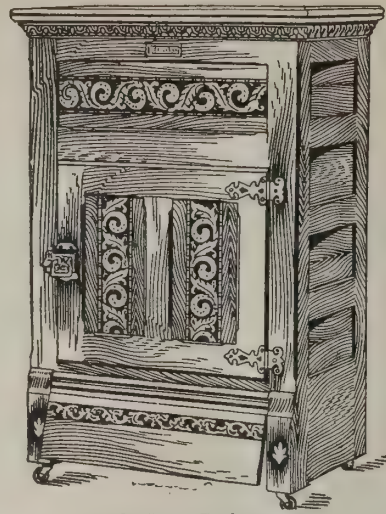
A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,HARRY LOUDERBOUGH, Proprietor,
JERSEY CITY, N. J. U. S. A.**Remarkable Fact.**

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD, Master Schooner "Florence Shay."

**Single-Door Refrigerator.**

28 in. long, 15 in. deep, 37 in. high; weight, when packed for export, 90 lbs.; measurement, 9½ cubic feet. Price, f. o. b. New York, \$4.50.

**CHALLENGE
REFRIGERATOR CO.**

Our plant, occupying twenty [20] acres of ground, is without question the largest and most complete in every detail of any similar works in the world.

Over 400,000**Challenge Refrigerators**

sold and in use throughout the United States of America.

Our catalogue, illustrating and describing the various styles of Refrigerators made by us, mailed postpaid to any part of the world. Prices quoted f. o. b. cars at New York City. Orders received through export commission houses.

Challenge Refrigerator Co.

MANUFACTURERS,

Grand Haven, Mich., U. S. A.**KEASEY WOOD SPLIT PULLEYS**

with Malleable Iron Hubs are mechanically correct in design and construction. No slippage on the shaft. No wide paddle-like arms to fan the air and consume power. Be progressive and use a modern pulley.

A half million already in daily use. Live machinery and supply dealers everywhere handle and carry them in stock. Catalog on request.

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Also Manufacturers of Hangers, Pillow Blocks, Shafting, Etc.
Send for Lists and Discounts.

AGENTS WANTED EVERYWHERE FOR**THE BEST LIGHT****The Cheapest and Strongest
Light on Earth.**

Makes and burns its own gas. It is portable; hang or set it anywhere. Requires no pipes, wires or gas machine.

A Safe, Pure White, Powerful, Steady Light. Permitted by Fire Insurance Underwriters.

No wicks to trim; no smoke or smell.

**SUPERIOR TO ELECTRICITY
OR ACETYLENE
AND CHEAPER THAN KEROSENE.**

Saving effected by its use quickly pays for it. Over one hundred styles of fixtures for indoor and outdoor use. This is the Pioneer Incandescent Vapor Gas Lamp. It is perfect. Beware of imitations.

Write for Catalogue, Lists and Discounts. Orders received direct or through exporting houses.

Manufactured by

The BEST LIGHT CO.

73 E. 5th St., Canton, Ohio, U. S. A.

Cable Address: "Best," Canton, Ohio.
Codes used: Liebers, A B C, 4th Ed., W. U.
Tel. Co. and Our Own.

**PRESIDENT
SUSPENDERS.**

The Great Suspender Success. Ask any American.

Wears Well. Sells Easy.

Guaranteed.

All Breaks Made Good.

Price, \$4.37½ per dozen.

Net spot cash;

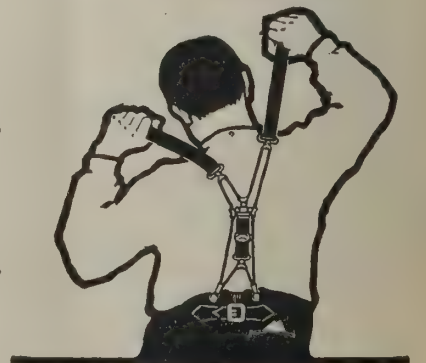
f. o. b. New York.

Ask for Special Discount

on ½ case (30 doz.) lots.

Sample pair, 50c.

Showcards in Every Box.

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Box 402, SHIRLEY, MASS., U. S. A.



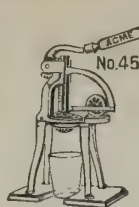
25. Quick and Easy Cork Puller.



28. Samson Cork Puller.



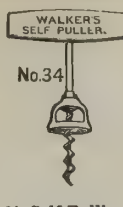
42. Quick and Easy Lemon Squeezer.



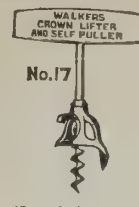
45. Acme Lemon Squeezer.



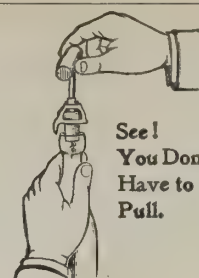
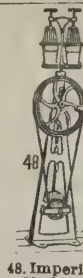
48 1/2. Quick and Easy Shaker.



34. Self-Pulling Cork Screw.



17. Self-Pulling Cork Screw.

See!
You Don't
Have to
Pull.

48. Imperial Shaker.

Any
American
Exporter
will buy
and
forward
these
goods.

ERIE SPECIALTY CO., Erie, Pa., U. S. A., Manufacturers for Export.

Tremolo Flat
Mandolin.

Guitar-Zither.

OSCAR SCHMIDT, Jersey City, N.J., U.S.A.

MANUFACTURER OF

MUSICAL INSTRUMENTS.

Special Offer for Export.—An assortment of 39 Instruments for \$89.40 (£18 13 5) Net.

F. O. B. New York, as follows:

All protected by patents.

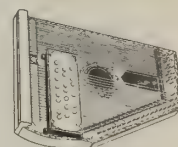
			Retail.	Net.				
3	Guitar-Zithers, No. 0,	27 strings, 3 chords	\$4.00	\$1.10 each	\$3.30	£0	13	9
3	" " No. 2,	31 " 4 " "	5.00	1.40 " "	4.20	0	17	6
3	" " No. 2 1/2,	41 " 5 " "	6.00	1.90 " "	5.70	1	3	9
3	" " No. 3 1/2,	51 " 8 " "	8.00	3.00 " "	9.00	1	17	6
3	Tremolo Flat Mandolins, No. 100,	made in bird's-eye maple, mahogany neck, selected spruce top, inlaid marqueterie and rosewood fingerboard	6.00	2.00 " "	6.00	1	5	0
3	Tremolo Flat Mandolins, No. 200,	same as above, but all rosewood with ebony fingerboard	7.50	2.40 " "	7.20	1	10	0
3	Mandolin-Harps, Style A,	31 strings, 4 chords	6.00	2.50 " "	7.50	1	12	1
3	" " Style B,	41 " 5 " "	8.50	3.50 " "	10.50	2	3	9
3	" " Style F,	51 " 8 " "	10.00	4.25 " "	12.75	2	13	2
3	Mandolins, 7 ribs, maple and birch, cheapest and best made		3.00	1.05 " "	3.15	0	13	1
3	" " 9 " rosewood and bird's-eye maple, mahogany neck		4.00	1.85 " "	5.55	1	3	2
3	" " 13 " " red " "		4.75	2.25 " "	6.75	1	8	2
3	" " 15 " " mahogany neck		5.50	2.60 " "	7.80	1	12	6
Total Net Price for 39 Instruments, f. o. b. New York			\$89.40		£18 13 5			

Approximate weights and measurements of assortment—Net, 112 lbs. (51 kilos); gross, 248 lbs. (113 kilos); cu. feet, 27 (3/4) cu. meter).

We will furnish the complete assortment, or any portion of it, at the prices quoted above. Order through any reliable exporter.

Cable Address:
"ZITHERCO."
ABC Code
used.

Mandolin.



Mandolin Harp.

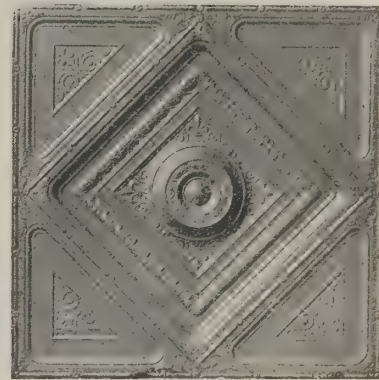
Interior Art Metal Is the Modern Fireproof
Finish for Ceilings and Sidewalls.

Highly ornamental. Will not crack, peel or fall off. More durable than plaster or plaster of Paris. "Canton" Metal Ceilings are the best metal ceilings because the construction is right. Previous experience unnecessary to erect them. Plans and working drawings showing application mailed with every order. Made in classified designs suitable for lodge halls, churches, storerooms, palaces or cottages. :: :: :: Our art book "G" for a postal.

The CANTON STEEL ROOFING COMPANY

Canton, Ohio, U. S. A.

New York Agency, 157 West Twenty-third Street.



M. R. HUTCHISON'S

Inventions for
the Deaf. . .

THE MASSACON

For the Cure of Catarrhal Deafness.

THE ACOUSTICON To Enable the
Deaf to Hear.

The manufacturers are pleased to announce that these instruments are now ready for the market. Their success is a matter of scientific history.

The Massacon may be ordered with the assurance that it will CURE deafness resulting from catarrh. Other causes should be made a matter of correspondence.

Manufactured under the personal supervision of M. R. HUTCHISON. Order through any commission house, mailing us a copy of order to avoid mistakes.

Hutchison Acoustic Company, Astor Court Building, New York.

Cable Address, "Acousticon."



MASSACON PRICES.

Type A—In a very handsome case of quartered oak, mahogany or ebony, as may be desired. Has necessary controlling apparatus for use in connection with electric light, such as may be found in any city or town, and ALSO IN CONNECTION WITH BATTERY, when light circuit is not convenient.

Price, f. o. b. New York, weight 5 lbs., - \$100
Battery, extra, weight 34 lbs., - 12

Type B—This instrument is identically the same as Type A in finish, except it is arranged to be operated with a battery alone and cannot be used with an electric-light circuit.

Price, including battery, f. o. b. New York, weight 5 lbs., - \$90
Battery, extra, weight 24 lbs., - 10

Type D—This instrument is not provided with the attachments for use with an electric-light circuit, but is used with a battery only. Nicely polished oak case.

Price, including battery, f. o. b. New York, weight 4 lbs., - \$50
Battery, extra, weight 12 lbs., - 6

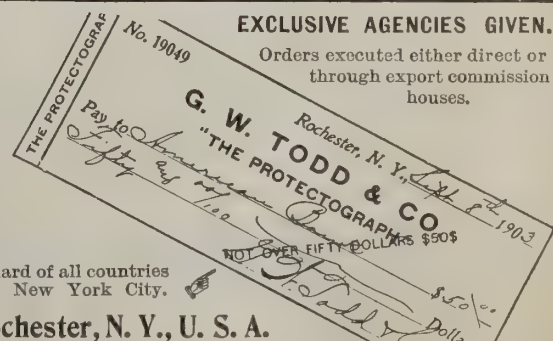
Thousands of Protectographs

Are now in daily use by the leading financial, industrial and mercantile institutions of America, and are exclusively employed by the United States Government.

The machine is a marvel of simplicity, being but six inches square and weighing only ten pounds, boxed ready for shipment. One movement of the lever indents the limiting line upon any preferred part of the check (see reduced facsimile of check) and by its system of compound levers forces an especially prepared indelible ink into the fiber of the paper, making it a part of the document itself and rendering its removal impossible.

The Protectograph is made to conform to the monetary standard of all countries and to print in any language. The price is \$30, delivered New York City.

G. W. TODD & CO., Mfrs., 40 Trust Bldg., Rochester, N. Y., U. S. A.



EXCLUSIVE AGENCIES GIVEN.

Orders executed either direct or through export commission houses.

Rochester, N. Y., Sept. 1, 1903
G. W. TODD & CO.
"THE PROTECTOGRAPH"
Pay to the order of
\$50.00
NOT OVER FIFTY DOLLARS
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Romanesque.



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Art Metal Ceiling

Exclusive and Artistic Designs Appropriate
for Any Style of Architecture.

Orders Filled Through Commission Houses. Correspondence Solicited. Write for Catalogs.

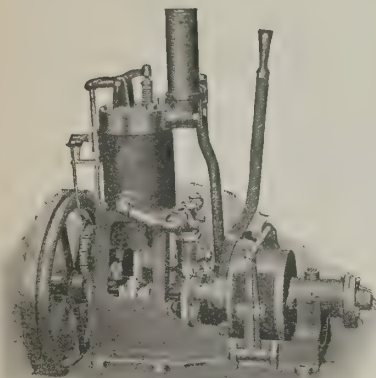
KANNEBERG ROOFING & CEILING CO., CANTON, O., U. S. A., MANUFACTURERS.

Patent Metal Shingles.
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Imitation Brick and Stone Siding.
Architectural Sheet Metal Work, Etc.

MARINE GASOLINE ENGINES

1 3/4 H. P. to 500 H. P.

"HERCULES"



High speed launch engines —one, two and three cylinders from 1 3/4 H. P. to 150 H. P.

Heavy duty engines for main or auxiliary power in vessels—two and three cylinders from 30 H. P. to 500 H. P.

Over 5,000 Hercules Engines Sold

We want responsible agents in several more foreign countries.

HERCULES GAS ENGINE WORKS, San Francisco, California.

"St. Louis A. B. C. Bohemian."

"KING OF ALL BOTTLED BEERS"



"Famous the World over"

(Trademark.)

AMERICA'S FAMOUS BOTTLED BEER.

Brewed and bottled expressly for the

EXPORT TRADE,

and sold in all civilized lands. Beyond all comparison the finest of bottled beers. Importers are invited to write direct to

THE AMERICAN BREWING Co., St. Louis, Mo.,

United States of America.

"KING OF ALL BOTTLED BEERS"



"Famous the World over"

Orders filled through export agents and also through FRANK S. DE RONDE CO., New York. Always mail us duplicates when ordering through commission houses.

TARR & WONSON'S COPPER PAINT

For Wooden Vessels' Bottoms, prevents boring of worms and all marine growth.

Awarded Eight Highest Medals: Gold, Silver and Bronze.



Excels on Every Point. Cheapest to Use in the End.

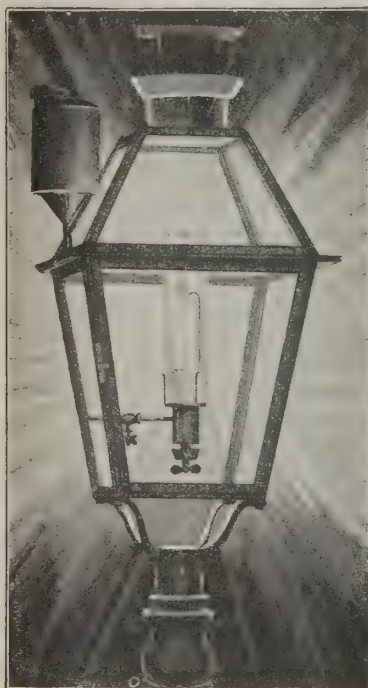
TESTIMONIAL. NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass. Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly, (Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

THE WORLD'S STANDARD FOR FORTY-ONE YEARS. RACING COMPOUND for Wooden Yachts' Bottoms, Bright and Smooth.

Manufactured Only by TARR & WONSON, Limited, GLOUCESTER, MASS., U. S. A.



No. 144.

"SUN" Gasoline (Petrol) Incandescent Lamps.

Every Light Is a Complete Gas Plant.

Magnificent Illumination.

Economical! Safe! Powerful! Convenient! Fully protected by Original Patents. Beware of Infringements and Cheap Imitations!

Ten times more light than Electric Incandescent or Kerosene Lamps

Have them in all styles from 100 CANDLE-POWER UP.

Also Beautiful "Sun" Incandescent Gas Naphtha Street Lamps.

MOST SUITABLE FOR FOREIGN TRADE.

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Irving's Wizard Top is a Scientific Wonder.

A Top within a Top. Made of STEEL, nickel-plated. Is a veritable Rotary Engine, gyrating in contrary directions while running at full speed. Its average spin is 8 minutes. Performs over 40 tricks. A child can spin it in 3 seconds. It maintains its equilibrium at any angle. Walks a tight or slack wire. Has no equal in the novelty world. Sells at sight. Over 500,000 sold in 17 months in the United States. The accompanying cuts illustrate only a few pedestal tricks.

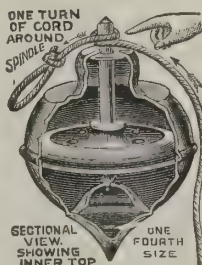
See Special Export Proposition.



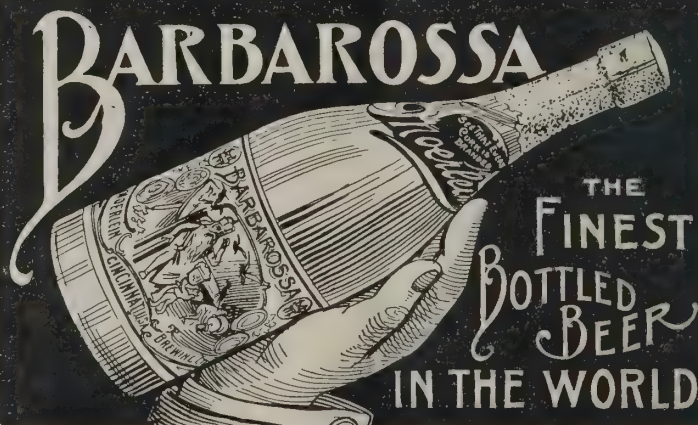
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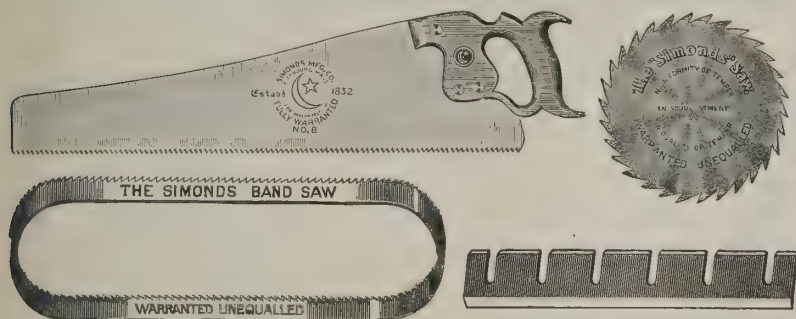
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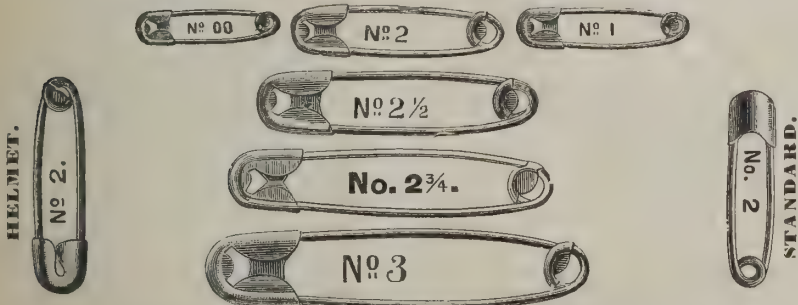


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MADE IN NICKEL-PLATE AND JET BLACK.

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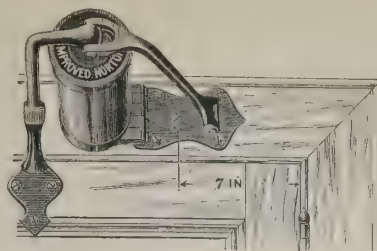
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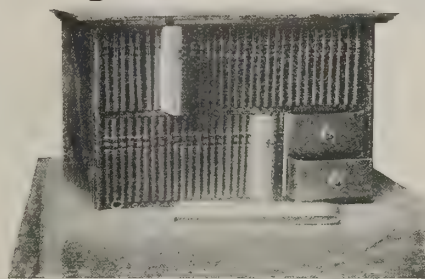
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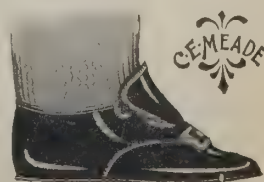
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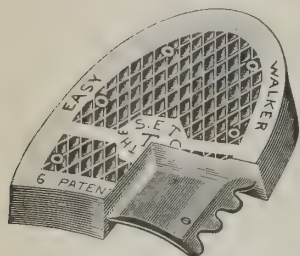
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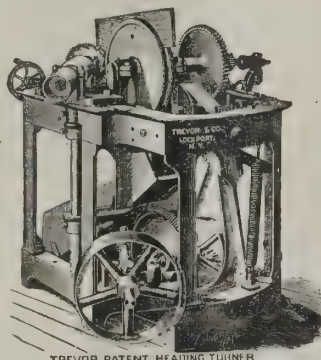
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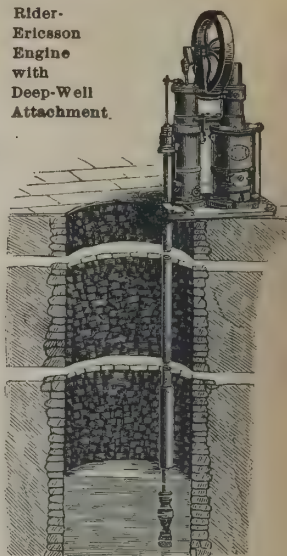
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The OLDS Gas and Gasoline Engines.

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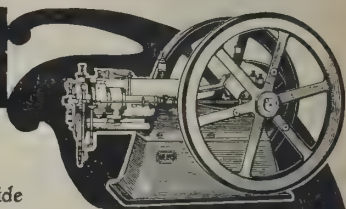
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Will wash fabrics, coarse or fine, as quickly and cleanly as any washing machine made, and being made of **Galvanized Steel** will outlive and outwear ANY THREE Wooden Washing Machines.

The galvanizing is performed after the machine is put together, thus preventing cracks, which would cause rust.

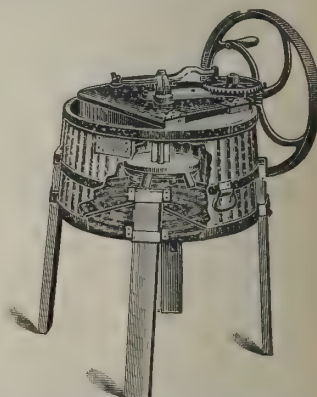
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Each machine occupies six cubic feet. Weighs seventy-two pounds.

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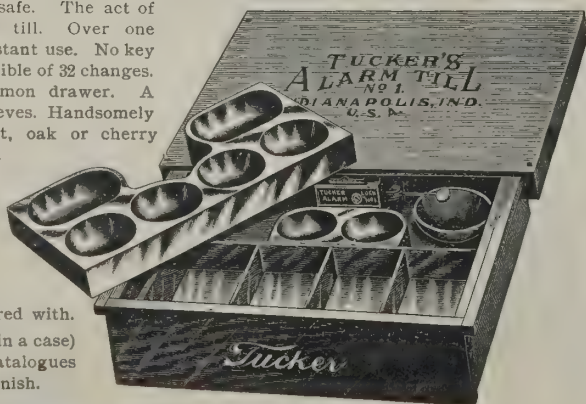


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The Heel That Won't Slip.

The heel with no holes to collect mud and dirt.

The heel that outwears all others.

The Foster Heel is the kind to buy.

The friction plug is the reason why. Foster Heels at your shoe man's cost no more than other kinds.

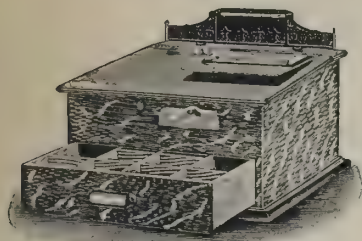
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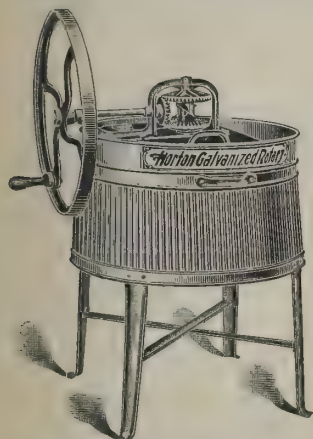
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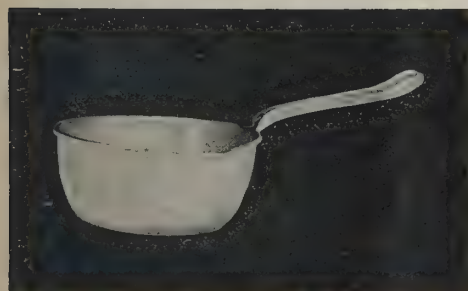
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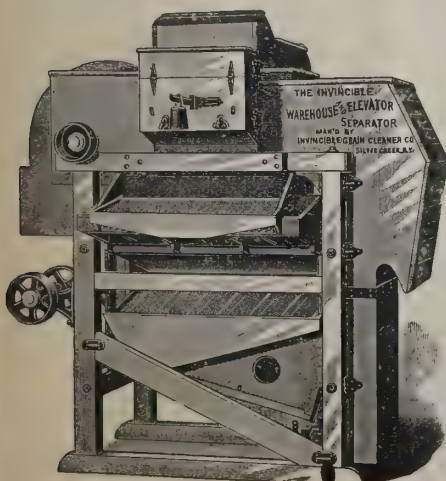
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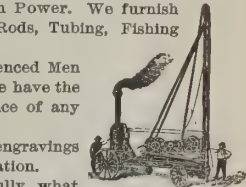
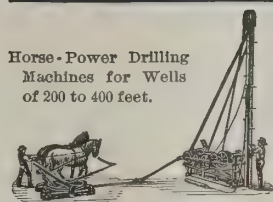
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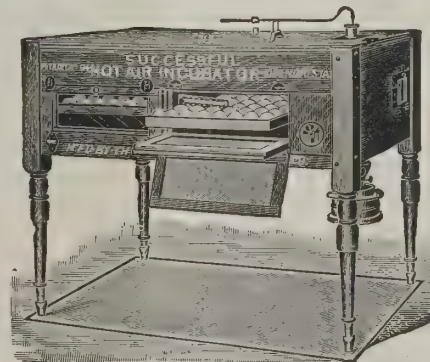
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Corn Sheller and Separator.

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WILL LAST A LIFETIME.

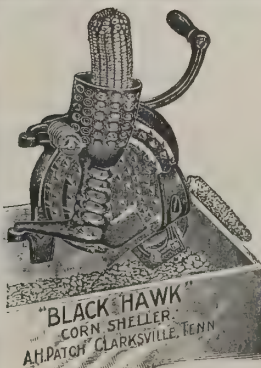
Weight, 15 lbs. Capacity, 8 to 14 bushels per hour. Largely of Malleable Iron. All bearings chilled. Attached to any box Instantly by Clamps.

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The drawer is made with
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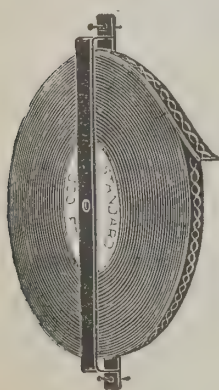
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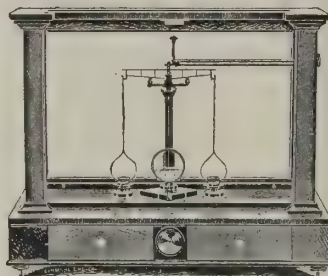
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BALANCES AND WEIGHTS OF PRECISION.



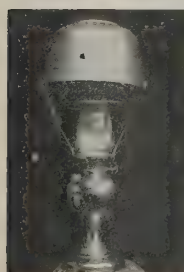
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Sensibility, 1-50 Milligram.

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A 20th CENTURY WONDER.

Heats, Lights, Cooks and Ventilates at One Cost.
MOST WONDERFUL MONEY AND FUEL SAVER KNOWN.

The **HELIOS**
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HEATER.

A scientifically constructed device easily adjusted to any Gas Jet or Oil Lamp, doubling the candlepower of the light, at the same time giving immense volume of heat for warming and cooking purposes.

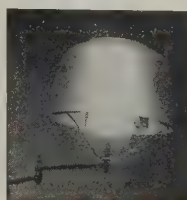
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Gives perfect ventilation and increased light and NO extra cost.

Entirely new; lasts forever; absolutely no dirt or odor.

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\$10.50 per dozen.

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Buildings.We have a handsome illustrated catalogue for
1904 which we will send free to those who apply
for it, mentioning THE AMERICAN EXPORTER.
We will also furnish estimates to the persons
who send us plans of the dwellings which they
wish to decorate. Address

WHEELING CORRUGATING CO., 47 Cliff St., New York, U. S. A.



The B. B. Reclining Chair,

In which to Read, Rest, Sleep, Write, Study, Sew or Smoke.

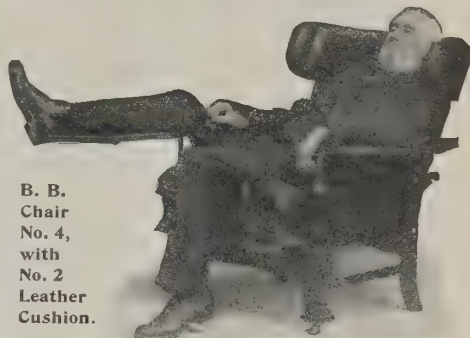
Adaptable to Your Different Inclinations of Mind or Body.

The Chair here shown is that known as our B. B. No. 4.
It is made in weathered oak finish and is leather covered.Upon receipt of **twenty-five dollars and fifty cents** in U. S. gold, or its equivalent, we will crate ready for steamer and deliver f. o. b. cars at New York City, **One No. 4 B. B. Adjustable Chair**, made from quartered-sawed oak, finished in either Golden, Weathered or Flemish.

Orders received direct or through export houses. Our illustrated catalogue, showing the various styles of chairs made by us, mailed postpaid.

DOMESTIC MANUFACTURING COMPANY,

Box 605, RACINE, WISCONSIN, U. S. A.

B. B.
Chair
No. 4,
with
No. 2
Leather
Cushion.

THE HIDEITE LEATHER CO., 112 Beach Street, Boston, Mass., U. S. A.

NOTHING BUT LEATHER.

Manufacturers of the celebrated "Hideite" Leather for boot and shoe heels, manufactured from sole leather fibre only. It takes an elegant finish, is MOISTURE-PROOF, and for heels is better and cheaper than sole leather. Now used extensively in the United States. It is now offered for export.

Foreign importers will please send their orders through their American agents. Send for samples and prices direct to Dept. M, THE HIDEITE LEATHER CO. at above address.

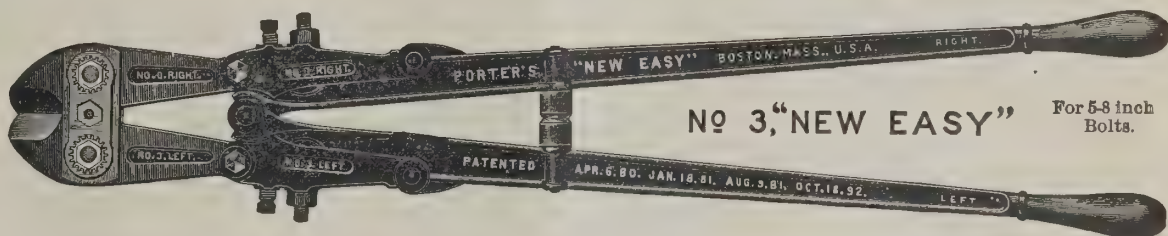
The "NEW EASY"
BOLT CLIPPER

IS THE BEST.

MANUFACTURED BY

H. K. PORTER,

6 Ashland St., EVERETT, MASS.



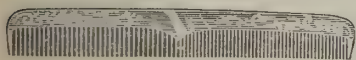
No 3, "NEW EASY"

For 5-8 inch
Bolts.

Manitowoc Aluminum Novelty Co.,

MANUFACTURERS OF

ALUMINUM COMBS AND ADVERTISING NOVELTIES.



OUR ALUMINUM COMBS are properly made, with thoroughly rounded, tapered and polished teeth, and are unsurpassed for UTILITY, BEAUTY, CLEANLINESS and DURABILITY. NON-TARNISHABLE and SANITARY. Our Combs are made from PURE NICKEL-ALUMINUM, and NOT from cheap alloys, some of which are now on the market.

SPECIAL EXPORT OFFER: Upon receipt of Twenty-five Dollars (\$25.00) in United States gold, or its equivalent, we will box, ready for steamer, and deliver F. O. B. cars at New York City, three gross (432) assorted Manitowoc Aluminum Combs. Assortment consists of ten numbers of the most staple Pocket, Dressing and Fine Combs. Weight, boxed, twenty-five pounds. Box measurement, 16x12x10 inches. For Five Dollars (\$5.00) additional we will send an assortment (one each) of selected samples of other Aluminum Goods, including advertising souvenirs. Weight, fifteen pounds. Box measures 10x10x4 inches. The two assortments, packed in one box, weigh thirty-five pounds. Box measures 20x12x10 inches. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us a duplicate of the order. Illustrated catalogue, with price list, sent with each shipment.

MANITOWOC ALUMINUM NOVELTY CO., Manitowoc, Wis., U. S. A.

THE SANITARY COFFEE MAKER.

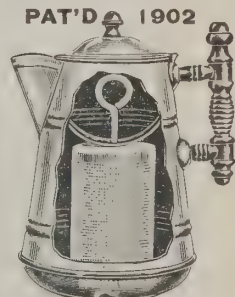
OVER HALF A MILLION IN USE
THROUGHOUT THE U. S. A.

GOOD COFFEE WITHOUT EGGS OR SACK.

Made of pure finely perforated aluminum.

Will not taint or tarnish. Will fit any Coffee Pot.
The quickest seller of any Household Article upon the market,
and should be in every house throughout the civilized globe.Sanitary Coffee
Maker.

FOR EXPORTATION ONLY. Upon receipt of Thirty-seven and 50-100 Dollars (\$37.50) in U. S. gold, or its equivalent, we will box ready for steamer and deliver F. O. B. cars New York, one hundred (100) SANITARY COFFEE MAKERS as follows: Fifty Style No. 2, capacity seven cups of coffee. Fifty Style No. 3, capacity fifteen cups of coffee. Style No. 2 retails in the U. S. at fifty cents each; Style No. 3 at seventy-five cents each. Size of box containing one hundred Sanitary Coffee Makers, 20x28x35 inches, weight fifty pounds. Each Sanitary Coffee Maker is packed in an individual paper box, suitable for mailing. The Sanitary Coffee Maker will fit any coffee pot. We also make large sizes of the Sanitary Coffee Maker (two to fifteen gallons capacity) for hotels, clubs and restaurants.

Sanitary Coffee Maker
within Coffee Pot.

THE WISCONSIN MFG. CO., Manitowoc, Wis., U. S. A.

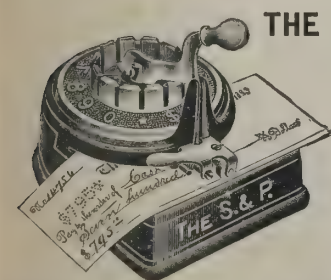
THE S. & P. CHECK PUNCH

AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.

ANY SIGN may
be had in place of
\$ when desired.

Net Weight 3 3/4 pounds.



The S. & P. Pinking Machine

BEST AND CHEAPEST.

Cuts fancy edge on silk or cloth. Will cut Chamois Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

SITTMANN & PITT, Brooklyn, N. Y., U. S. A.

Racine Incubators

The Automatic
Racine
Incubator.—
120 and 225
Eggs.are Hot-Water, Self-Ventilating,
Self-Regulating Incubators. Racine
Brooders are Hot-Water Brooders.
Made by a man who has devoted 22
years in perfecting them. Prices
reasonable. Satisfaction guaranteed.No matter what other makers
you write for catalogue, write us,
too. We will send you the best
book of all. It tells all that an
incubator should be and why.Reliable representatives wanted.
Write to-day. Address

RACINE HATCHER CO., Box 217, Racine, Wis., U. S. A.

TRADE-MARK
REGISTERED.

A. P. W. PAPER CO., ALBANY, N. Y., U. S. A.

The largest manufacturer of TOILET PAPER in the world.

CORRESPONDENCE SOLICITED.

Quality
Chocolates

H. D. FOSS & CO., Manufacturers and Exporters of QUALITY CHOCOLATES.

IN BULK,

FIVE-POUND BOXES,

AND IN FANCY PACKAGES.

Orders filled through Commission Houses. Correspondence solicited. Booklet 1901 on application.

BOSTON, MASS., U. S. A.



SILVER LAKE COMPANY, The Original Manufacturers of Solid Braided Cordage.

WINDOW SASH CORD,
RAILROAD BELL CORD,COTTON, LINEN OR
ITALIAN HEMP.

ARC LIGHT and TROLLEY CORD.

Boston, Mass., U. S. A.

THE BEST IS THE CHEAPEST:

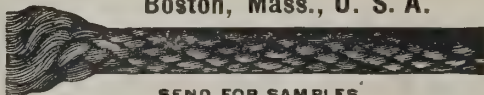
CLOTHES LINES,

AWNING AND MASONS' LINES,

CHALK LINES, ETC., ETC.

Catalogue "A" on application.

STEAM PACKINGS, SILVER LAKE & MILLER SOAPSTONE PACKING.



SEND FOR SAMPLES.



BRADLEY BRACKET.

Bradley Steel Shelf Brackets.

"The Most Popular Bracket Made."

We have made nothing but this Steel Wire Shelf Bracket during the past eleven years. We have learned how to make it, and are willing to sell it low. That is why our output is close on to 11,000 Brackets each day.

Orders received through export houses. Please specify "Bradley," and when ordering, to avoid errors, mail us duplicate of order.

ATLAS MANUFACTURING CO., New Haven, Conn., U. S. A.



Massachusetts Brand.

SOLID BRAIDED CORDAGE.

Sash Cord,
Clothes Lines,
Railroad Cords,
Arc Light Cord,
Lariats, Etc.

SEND FOR SAMPLES.

Awning Lines,
Masons' Lines,
Chalk Lines,
Curtain Cord,
Shade Line, Etc.

SAMSON BRAND.

SAMSON CORDAGE WORKS,

Boston, Mass., U. S. A.

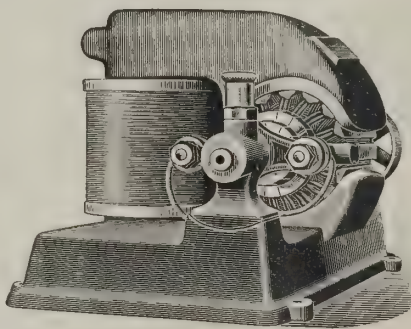
The Type "B" Dynamo or Motor.

Price, \$26.50,
F. O. B. New York.

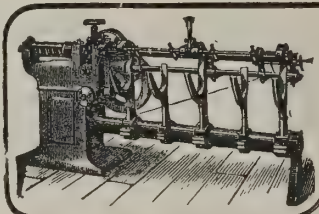
Output: as a Dynamo, 8 lights or 450 watts; for Electro-plating, 6 volts and 50 amperes; as a Motor it will deliver $\frac{1}{4}$ horsepower.

This is a GOOD machine and will give the best of satisfaction. Standard voltage, 110, but can be wound to order for any voltage up to 500, at special prices.

Send for Illustrated Bulletin.



THE ELBRIDGE ELECTRICAL MFG. CO., Elbridge, N. Y., U. S. A.



Our Automatic Wire Straightening and Cutting Machine

Straightens and cuts accurately every minute from 60 to 100 feet of wire, any desired length, directly from the coil.

If your work requires riveting a number of rivets, or drilling a number of holes, you should send for our Booklet telling of the special labor-saving machines we make.

THE F. B. SHUSTER CO., Formerly John Adt & Son, New Haven, Conn., U.S.A.

"They Sound Different"

BELL BRAND

STEEL and WOUND

Musical Strings.

For Violin, Guitar, Mandolin,
Banjo, Harps, Etc.

Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.

NATIONAL MUSICAL STRING CO.,

New Brunswick, N. J., U. S. A.



Rife Hydraulic Engine.

PUMPS WATER BY WATER POWER.

Irrigation with Rife engines.

Does not require any care or expense.

Water supply for towns, railroad tanks, country houses. All engines guaranteed. Catalogue free. Estimate furnished. Engines never stop. Pump water to 30 feet high for each foot of head. 4,000 engines successfully working.

RIFE ENGINE CO., 126 Liberty St., New York, U.S.A.



AYVAD'S WATER-WINGS

Price, 35c. each; \$2.50 per doz. for the trade only. Send \$5.00 and we will forward 2 doz. for trial. Every export house handles these goods now. It is a pocket life preserver and can be easily adjusted. A person weighing from 50 to 250 pounds can float on these wings. They are a great help to persons desirous of learning how to swim. Weight, 8 ounces.

Ayvad Mfg. Co., Hoboken, N. J., U. S. A.



CHIEF

Belting and Lace Leather

MADE BY

Bennett-Dryer Belting Co.,

ST. LOUIS, U. S. A.,

ARE THE BEST.

Write to us for samples and prices.

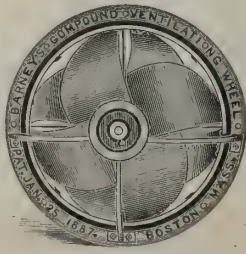
Agents wanted all over the world.

THE BARNEY VENTILATING FAN WORKS,

Manufacturers and Exporters of the

Barney Compound Ventilating Wheel

for the Removal of Smoke, Dust, Heat, Steam, Foul Air or Gases, and for All Sorts of Ventilation.

Catalogue "E" on application.
Correspondence solicited.

FACE VIEW.

165-167 Fort Hill Square,

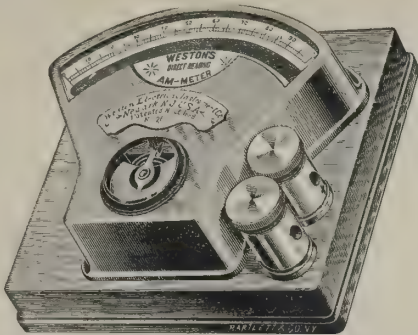
Boston, Mass., U. S. A.

WESTON Electrical Instrument Co.

Waverly Park, Newark, N. J., U. S. A.

WESTON STANDARD PORTABLE
DIRECT-READING

**Voltmeters,
Millivoltmeters,
Voltammeters,
Milliammeters,
Ammeters,
Ground Detectors and
Circuit Testers,
Ohmmeters,
Portable Galvanometers.**



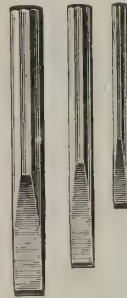
Our Portable Instruments are recognized as **The Standard** the world over. The **Semi-Portable Laboratory Standards** are still better. Our **Station Voltmeters and Ammeters** are unsurpassed in point of extreme accuracy and lowest consumption of energy.

BERLIN—EUROPEAN WESTON ELECTRICAL INSTRUMENT CO., Ritterstrasse No. 88.
LONDON—ELLIOTT BROS., Century Works, Lewisham.
PARIS, FRANCE—E. H. CADOT, 12 Rue St. Georges.
NEW YORK OFFICE—74 Cortlandt Street.

Cold Chisels.

We have been making Tools for over 32 years and are selling our Cold Chisels to many of the largest American jobbers.

To introduce our product to the Foreign Trade we will on receipt of \$50.00 U. S. gold, or its equivalent, pack for export and deliver in New York the following Assortment of our Cold Chisels:



15 dozen Chisels made of	3/8 inch Octagon Steel,
15 " " " " " "	1/2 " " " " " "
15 " " " " " "	5/8 " " " " " "
15 " " " " " "	3/4 " " " " " "
5 " " " " " "	7/8 " " " " " "

This assortment will weigh approximately 550 lbs. The two smallest sizes are packed 1 dozen in a box. Each box carefully labeled. This is an offer that should not be overlooked. It may not appear again, so better order now. If you send your order through an export house, better send a copy direct to us to avoid all chance of error.

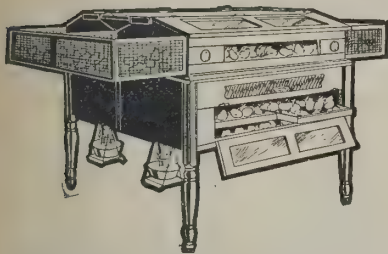


W. H. ANDERSON & SONS,

Tool Manufacturers and Steel Workers,

Detroit, Mich., U. S. A.

OUT-HATCHES ITS COMPETITORS!



Why does the Reliable Incubator give such remarkable results—hatching 85, 90, 95 per cent. of the fertile eggs? Because our heating, regulating and ventilating systems give pure, vitalizing oxygen to germ and growing chicks. Other reasons why the Reliable is a profit-bringer are its durability, and economy of time and material. It has double top and bottom, made of best kiln-dried lumber, so treated as not to absorb moisture.

Reliable Incubators

have trays so constructed that it's easy to reach either eggs or chicks. Remember, too, that the Reliable out-hatches its competitors so often because the heat in corner or center is always the same temperature—a mellow, even heat in every cubic inch of the egg chamber. Our new catalogue is free. It tells a lively story giving warnings, and simple, yet full instructions on hatching and raising poultry successfully. Just send 10 cents to pay postage

is always the same temperature—a mellow, even heat in every cubic inch of the egg chamber. Our new catalogue is free. It tells a lively story giving warnings, and simple, yet full instructions on hatching and raising poultry successfully. Just send 10 cents to pay postage

RELIABLE INCUBATOR & BROODER CO., Box A 000, Quincy, Ills., U. S. A.

"SUVLIGHT," THE LIGHT OF THE AGE.
Patent No. 738160—150 candlepower—saves 80 per cent. of gas and gives a beautiful electric effect.

Never Blackens Mantles.

Incandescent Burners, as generally constructed, give much annoyance and trouble always to get the exact mixture of gas and air to make the most effective combustion, but with "Suvlight," by the simple movement of the thumb, the exact proportion of gas and air and the highest possible illumination are instantly obtained. Adapted for all kinds of lamps, mantles and any variation of gas pressure. It is the long-felt want in private and business houses. Write for lowest export prices.

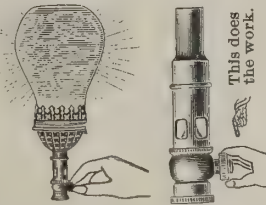


"SUVLIGHT" GAS HEATERS

Introduced Into the Whole World. Good for All Seasons, "Suvlio" has stood the test of time. Name "Suvlio" and Patent Nos. 571916, 27876, 573205 stamped on top of each heater. If you handle similar heaters be sure they are not infringements, and thus render yourself liable for damages. "Suvlio" is the real thing—better and cheaper.

SUVLIO HEATING AND LIGHTING CO.,

1079 Third Ave., 40 West Broadway and 59-61 Park Place, New York, U. S. A.



THE IDEAL CLIP

will hold more papers than any clip of its size on the market. It has

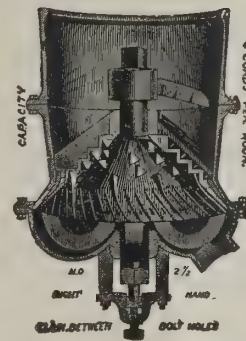
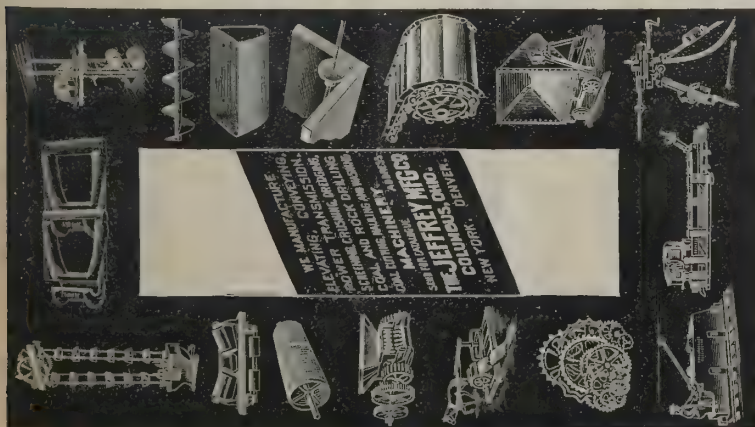
NO UNPROTECTED POINTS.

Instantly applied—observe the cut—there are FOUR impinging points, giving a firm and evenly distributed grip.

PRICES: 15c. per Box of 100.
\$1.35 per Carton of 10 Boxes.
\$1.25 per 1,000 Bulk.

Write for trade prices and discounts, also catalogue of specialties. Postage stamps not accepted.

Cushman & Denison Mfg. Co., 240-242 West 23d Street, New York, U. S. A.



EUREKA BARK MILL CO.,

333 East Fulton St., Lancaster, Pa., U. S. A.

Manufacturers of

Bark Mills and Tannery Machinery

Including the Celebrated "EUREKA" Bark Mill

It grinds uniformly on wet and dry bark. It does more work with given power and less repairs than any other mill. Accurate and simple. Cannot get out of order. Entirely satisfactory.

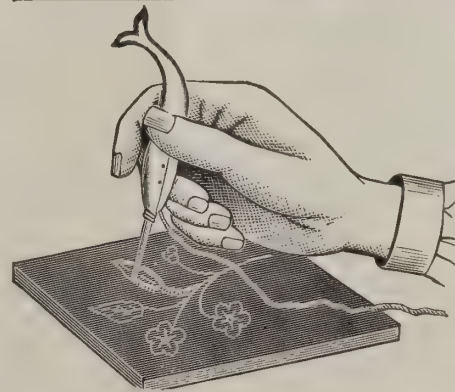
Centrifugal Pumps, Tannery Boilers, Steam Engines, Leather Pressure Rollers and Beds, Tan Oven Castings, Etc.

Write for Catalogue "A" and Prices for Export. Orders executed either direct or through Export Commission Houses.

RUBBER TYPE

Is as useful as your typewriter in your office. It is made so that you can put it into a holder and use it immediately as a rubber stamp. You can set three or four lines if you wish. For business men we have a special set with five capital letters and six small letters of the ones used most, and the rest in proportion. Price, \$2.00, postpaid. We also manufacture Rubber Stamp Machines, Printing Presses, Steel Stamps, Seals, Stencils and Rubber Stamps.

THE J. F. W. DORMAN CO., Baltimore, Md., U. S. A.



AGENTS WANTED

TO SELL OUR
SILVER-HANDLE

Embroidery Needles

Which do elegant work on any woven goods, making beautiful raised figures of birds, animals, flowers and many useful articles to ornament the home. Any person can use it and do the work ten times faster than by hand. Sells well with house-to-house agents, or via retail catalogues as a mail-order article. We furnish cuts free to those who will catalogue it.

WHALE ART CO.,

513 Bates St., St. Louis, Mo., U. S. A.

Riessner's Imperial Gold Ink.

An entirely new article; not the kind that you have used for the past 20 years, but a gold ink that is equal to dry bronzing. Made only for Plated and Coated Stock. Nothing equal to it. A time and labor saver. Any printer can use it. The most brilliant Gold Ink ever made. Give it a trial and be convinced. Something that all printers have been looking for. Rich gold, pale gold and copper, \$3 per lb.; aluminum, \$4 per lb. Put up in 1-lb. tin cans. Liberal discounts for quantities.

Orders received through any American export house. To avoid errors please mail us duplicate of order.

T. RIESSNER, 57 Gold St., New York, U. S. A.

**PRINTS
BRIGHT
GOLD.**

Send your orders to

DOCTOR HARRISON PAIN CURER CO.,

PROVIDENCE, R. I., U. S. A.

Manufacturers and Exporters of Harrison's Pain Curer—an Instant Reliever. Also Manufacturers of Infant Syrup—the Nurse's Treasure; Nervina—the Nerve Strengthening; Malaria Specific—cures La Grippe and Malaria; Special Antidote—for Kidney Complaints; Soothing Balm—for Coughs, Croup and Asthma; Magnetic Healer—Skin Beautifier and Healer; Herbal Discovery—Great Blood Purifier, and all kinds of Cooking and Medicinal Extracts for family use. Orders filled through commission houses. Correspondence solicited. Catalogue H on application.



VAN BIBBER'S "ROUGH AND READY" ("El Tosco y Listo").

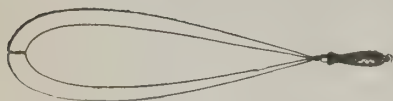
PRINTERS' ROLLERS

For ANY climate, hot or cold, can be made at once by any printer. You can make the best rollers, as hard or as soft as you please. No roller can be better. "Rough and Ready" does not spoil from age. English and Spanish directions. Price, 35c. List per pound, 77c. List per kilo, f. o. b. New York. Being an unfinished composition, the rollers when made cost less than this. Send to us for pamphlet. Used since 1878. We are manufacturers who sell at first hand and invite correspondence from prominent foreign dealers, to whom we offer special inducements; or, if you prefer, order through Amsinck & Co., American Trading Co. or any other responsible New York exporter.

Printers' Roller Composition.

CADY MFG. CO., Auburn, N. Y., U. S. A.

MANUFACTURERS AND EXPORTERS OF THE



Cady Carpet and Rug Beater

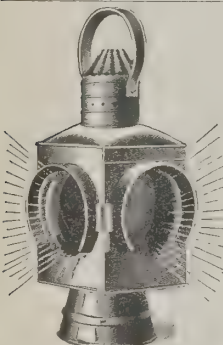
and Other Specialties, in House Furnishings.

Beats all dust raisers. It is practically two beaters in one, as the illustration shows. Is made of coppered steel wire and is 30 inches long. The four wires are twisted together, going from one-half to two-thirds, and one clear through the handle, securing the same permanently in place. Orders filled through commission houses. Correspondence solicited.

PETER GRAY & SONS,

88-90 Union Street, Boston, Mass., U. S. A.

MANUFACTURERS OF



Railroad,
Ship, Street
and Square

Lanterns.

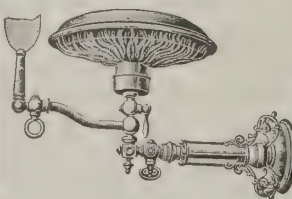
Heavy Tinware for Railroads,
Oil Cans of every description.
Locomotive Gauge Lights.

Orders filled through commission houses. Correspondence solicited. Catalogue "G" on application.

"FERNO" Heating Disc & Cooking Stove

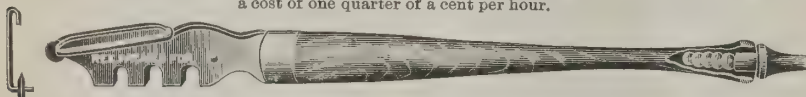


PARLOR HEATED WITH THE "FERNO"



BATHROOM HEATED WITH THE "FERNO"

A Unique, Compact and Ornamental Gas Furnace. Will heat an ordinary bedroom in 7 minutes at a cost of one quarter of a cent per hour.



The "Rex" Magazine Glass Cutter with five extra cutters. Additional "Rex" Cutters when ordered will be supplied in package of one dozen each.

The Standard Stamping and Die Co., - Brooklyn, N. Y., U. S. A.

Quality Counts.

Merit Wins.

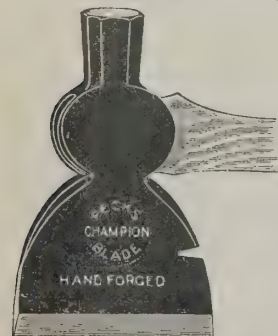
PECK'S HATCHETS and AXES.

All Hand Forged.
Fully Guaranteed.

PECK EDGE TOOL CO.,

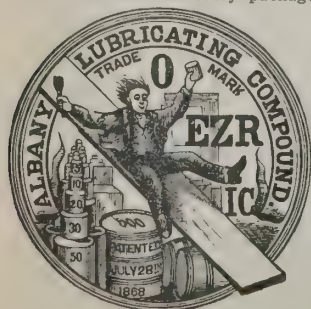
Cohoes, N. Y., U. S. A.

Write for Catalogue and Prices.



There Is Only **ONE ALBANY GREASE**

This Trademark on every package.



Look out for Yellow Label.

ADAM COOK'S SONS, - 313 West Street, New York, U. S. A.

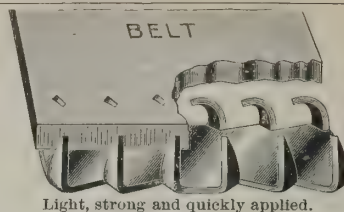
And we are the only Makers.
Have you seen Albany Grease? How many know its worth?
Cost of using Oil.

Cost of using Albany Grease.

Albany Grease is the only safe lubricant for electrical machinery of all kinds and is used by all the large plants and every street railway in the U. S. A. Self-acting. Where oil is used we can save you from $\frac{1}{4}$ to $\frac{1}{2}$ in the cost of lubrication. Oils are advancing and it will pay to use Albany Grease at the present prices. Small 4-oz. sample free on application.

To introduce abroad [only] will box ready for steamer and deliver in New York sample case of 100 lbs., containing two 10-lb. cans each Nos. 0, 1, 2, 3 and X Albany Compound at \$12 American Gold, net. Case measures 36 x 14 x 7 1/2; gross weight, 123 lbs. Order direct or through your Commission House.

Cable address: "OEZRIC," New York.



ACME STEEL BELT HOOKS.

Trial package weighing 12 lbs., contains 100 fasteners for belts 2 inches (50 m/m) wide; 100 for belts 1 1/2 inches (40 m/m) wide; 100 for belts of all widths, and 1 box of assorted sizes.

Net Price, at New York, \$3.00.

Sold direct or through export houses.

W. O. TALCOTT, Providence, R. I., U. S. A.

Light, strong and quickly applied.



No Physician's Office Equipment Is Complete Without Some of Our

Diagnostic Instruments, With COLD LAMPS.

Send for Catalogue A.

Rochester Surgical Appliance Co., 17 ELM STREET, ROCHESTER, N. Y.

THE EAGLE WINKER MFG. CO.

MANUFACTURERS AND EXPORTERS OF

Star Pointer Knee Boot, 20th-Century Toe Weight, Chehalis Hopple, Winkers, Fronts and Housings.

Orders Filled through Commission Houses. Correspondence Solicited. Catalogue B on Application.

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U. S. A.



Rings that are Guaranteed to give wearer Satisfaction

MADE OF ROLLED-GOLD SEAMLESS WIRE.

In order to introduce our lines we are prepared to send an assortment of our samples, 48 styles of our rings for \$10.00, U. S. Currency, which will give an idea of the excellent quality of our manufacture. Catalogue and price list on application. Orders executed direct or through any export commission house.

THE R. L. GRIFFITH & SON CO., Providence, R. I., U. S. A.

Established 1879



Palmer Gasoline Engines and Launches.

Over 9000 in Successful Operation.

PRICES FOR EXPORT ONLY:

1 1/2 H. P. Two-Cycle Marine Engine	\$ 75.00
3 " " " "	90.00
5 " " " "	150.00
7 " " " "	175.00

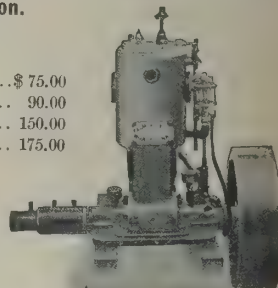
Four-Cycle Motors from 3 to 32 H. P. each.

Automobile Motors and Complete Launches.

Send for Catalogue.

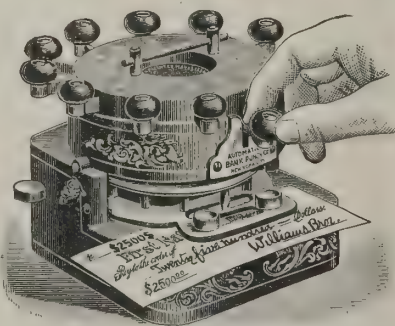
PALMER BROS.

COS COB, CONN., U. S. A.



Protection for Bank Checks!

A device that insures bank checks and drafts from being raised or altered appeals to all good business concerns—conservative as well as progressive.



The laws of nearly all countries make it incumbent upon those issuing checks to surround them with every obtainable protection.

The Ingersoll Automatic Check Punch cuts the marks and figures into the check and on account of their peculiar design, they cannot be successfully altered.

Guaranteed five years—lasts twenty.

Used and endorsed by leading banks and mercantile houses of the United States

Correspondence invited from houses able to distribute in quantities.

Price, \$25.00

LIBERAL DISCOUNTS TO THE TRADE.

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★ STAR CREAM SEPARATORS. ★

Over 250,000 in use.

More simple in construction, requires less labor and makes from 20 to 30 per cent. more butter than any other separator on the market.

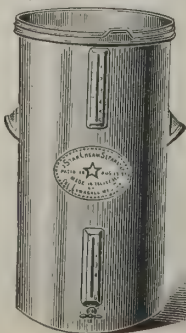
To introduce abroad.—We will, upon receipt of Twenty-four dollars and fifty cents [\$24.50] in U. S. gold, or its equivalent, box ready for steamer and deliver f. o. b. cars at New York City, one of each of our Star Cream Separators, seven in all, as follows:

No. 0.	Capacity [1 cow] 24 quarts.
No. 1.	Capacity [1 to 2 cows] 48 quarts.
No. 2.	Capacity [3 to 4 cows] 88 quarts.
No. 3.	Capacity [6 to 8 cows] 118 quarts.
No. 4.	Capacity [8 to 10 cows] 130 quarts.
No. 5.	Capacity [15 cows] 160 quarts.
No. 6.	Capacity [20 cows] 200 quarts.

Weight of the seven Star Cream Separators, boxed for shipment, 140 lbs.

Orders received direct or through export houses. When ordering through the latter, please mail us duplicate of order, to avoid errors.

LAWRENCE MFG. CO., Toledo, U. S. A.





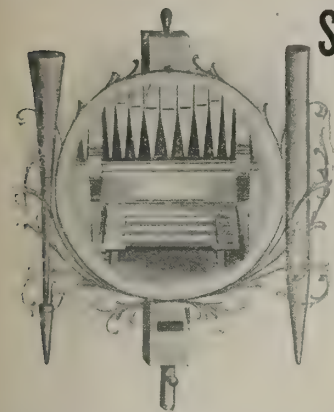
Noxall Natural Stone Water Filters.

Make all water, no matter how dirty, absolutely pure. Prevent typhoid and all zymotic diseases. Are small, compact, simple and inexpensive. All sizes and prices from \$2.50 up. For full particulars, terms, discounts, etc., write to

AMERICAN FILTER CO.

580 Montgomery Bldg., Milwaukee, U. S. A.

ESTABLISHED 1832.



Samuel Pierce Organ Pipe Co.

Manufacturers and Exporters of

Metal and Wood Organ Pipes

AND ORGAN MATERIALS.

SPECIALTIES: Decorating Front, Pipes, Voicing Flue and Reed Pipes.

The Oldest Organ Pipe Manufacturers in the United States.

Correspondence solicited. Catalogue "D" on application.

SAMUEL PIERCE ORGAN PIPE CO.,
READING, MASS., U. S. A.

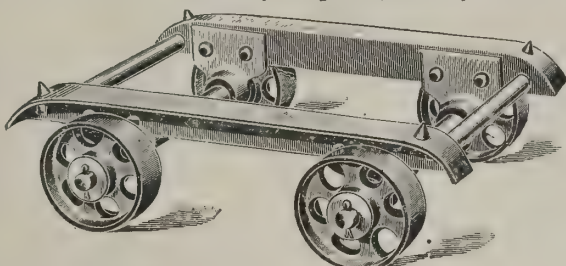
CITY FORGE & IRON WORKS, Dayton, Ohio, U. S. A.

Gem Box Truck

Made of Steel and Cast Iron.

Will carry a load of 2000 pounds. Weight only 44 pounds. Orders filled through commission houses.

Special Export Offer—Six trucks, packed for export and delivered f. o. b. cars New York, for \$36.00 net. Size of crate with six trucks, 20x26x40 inches; with one truck, 20x26x8 inches.



A. W. BRIM

Manufacturer and Exporter of

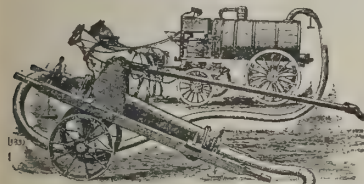
Lead Composition and Brass

Pattern Letters and Figures

FOR FOUNDRY MEN AND PATTERN MAKERS.

Orders filled through commission houses. Correspondence solicited. Catalogue "B" on application.

SENECA FALLS, N. Y., U. S. A.



The Odorless Excavating Co.

Manufacturers and Exporters of

ODORLESS PUMPS AND APPARATUS.

Orders Filled Through Commission Houses. Correspondence Solicited.

Boston, Mass., - - - U. S. A.

200-Egg Incubator for \$12.80

The simplicity of the Stahl Incubators created a demand that forced the production to such great proportions it is now possible to offer a first-class 200-egg incubator for \$12.80. This new incubator is an enlargement of the famous

WOODEN HEN

recognized the most perfect small hatcher. This new incubator is thoroughly well made; is a marvel of simplicity, and so perfect in its working that it hatches every fertile egg. Write for anything you want to know about incubators. Send for the new free illustrated catalogue.

GEO. H. STAHL, Quincy, Ill., U. S. A.



GEORGE D. LAMB,

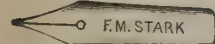
Manufacturer and Exporter of

Lamb's National Strap Fastener and Leather Straps of All Description.

Orders filled through commission houses. Correspondence solicited. Circular "L" on application.

192 Fulton Street New York U. S. A.

F. M. STARK, 111 Himrod Street, BROOKLYN, N. Y., U. S. A.

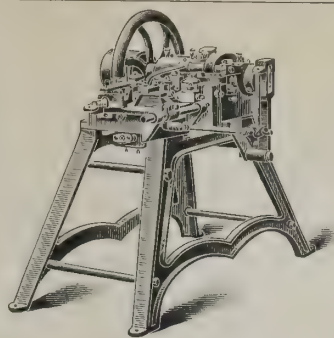


Manufacturer of

Fine Gold Pens.

ALL SHAPES AND STYLES.

Correspondence solicited. Order direct or through commission houses.



Wire Nail Machine.

MACHINES FOR MAKING

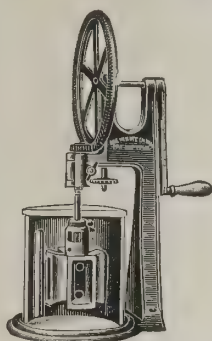
Wire Nails.

Orders filled through commission houses.

Send for Catalogue "N."

KIMBALL BROS. & SPRAGUE

Brockton, Mass., U. S. A.



ONE-MINUTE CHURN.

From Milk to Butter in ONE Minute. NO CREAM SEPARATOR NECESSARY.

The use of the "One-Minute Churn" assures to private families fresh, pure and wholesome butter at all seasons of the year, doing away with tainted and poorly manufactured butter.

EXPORT ONLY.—Upon receipt of Thirty Dollars (\$30.00) in U. S. Gold, or its equivalent, we will box, ready for shipment abroad, one of each, seven in all, of our "One-Minute Churns" as follows:

Size A,	Industrial Miniature, capacity 1 quart
Size No. 1 (Special Household Size)	1 gallon
Size No. 2	3 "
Size No. 3	5 "
Size No. 4	7 "
Size No. 5	9 "
Size No. 6	13 "

NOTE.—Size A is an Industrial Toy for Children. Orders received direct or through export commission houses. Specify "One-Minute Churns."

THE ONE-MINUTE CHURN CO.

I. M. MURPHY, President.

No. 9 Old Slip, New York, U. S. A.

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Foreign Commission Brokers and Correspondents.

We would like to communicate with reliable brokers with the view to securing their services to represent us in the sale of stock in a meritorious company.

Bank references on application.

Address all communications to the

DELAWARE OIL, GAS AND DEVELOPMENT CO.,

Calvert Building, Baltimore, Md., U. S. A.

GOLD PENS—ALL SHAPES AND STYLES.

For Jobbers and FOUNTAIN PEN Manufacturers.

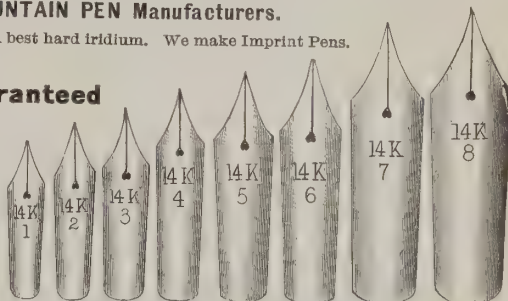
All Pens warranted 14kt. gold with best hard iridium. We make Imprint Pens. Imprints free on quantity orders.

Smooth Points Guaranteed

Full line Long and Short Nib Gold Pens. Send your name and let me quote you export price.

GEO. P. GAYDOUL,
17 John St., New York,
U. S. A.

Cable Address: "GOLDPENS."
Western Union Code used.



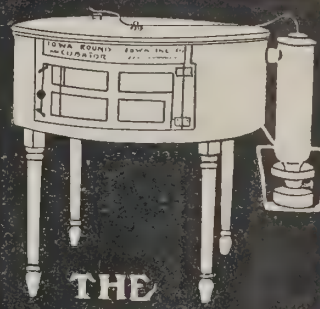
355 Eggs 354 Chicks

That's the result Mr. Geo. McDowell, Chemung Center, N. Y., obtained with an

IOWA ROUND INCUBATOR

The incubator that rounds out the largest number of chicks per hatch every time. If you are sure of your eggs you can rest assured of the same number of chicks—strong and healthy—with the Iowa Incubator. Catalogue and prices free on request.

Iowa Incubator Co., Box 140, Des Moines, Iowa



THE
IOWA

O-HI-O COOKER & OIL STOVE CO.,

656-660 JEFFERSON AVENUE, TOLEDO, OHIO, U. S. A.

Good, Economical Cooking.

We can save you the services of a cook or make a good cook out of a poor one. Saves you 50 per cent. in fuel, labor and time. Insures you deliciously cooked, easily digested, never spoiled, steaming hot meals, all cooked over one burner.

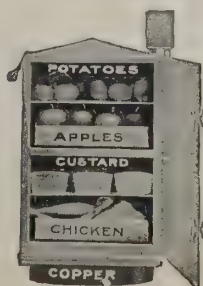
GRAND FOR CANNING FRUIT.

Orders Promptly Filled Direct or Through N. Y. Commission Houses.

In latter case, send us duplicate order to avoid errors.

Agencies Wanted in All Trade Centers of the World.

We manufacture a full line of OIL STOVES that make a good seller in connection with cookers. Write for Catalogue and Discount.



\$3.50 up.



\$4.30 up.

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It is *impartial* because it treats all its patrons alike. It cannot, for this reason, and it does not, publish write-ups or puffs of any specific make of goods, no matter whether advertised in it or not. It charges the same price for the same services to all alike.

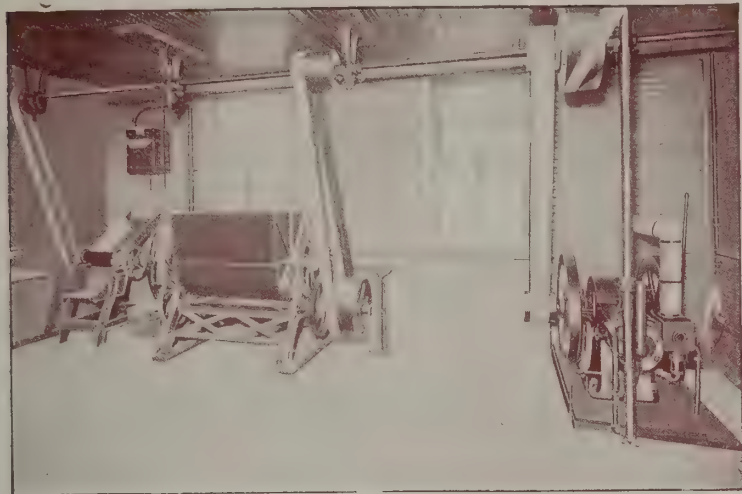
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THE JOHN C. COCHRAN CO.

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We illustrate herewith a Convenient Arrangement for the Baker's Workshop.

The machine at the left is our **No. 2 Dough Brake**, the next our **1½-barrel Dough Mixer**, and on the extreme right our **7½-H. P. Gas Engine**. The cost of this outfit, including pulleys, shafting and freight f. o. b. New York, boxed, is **\$686.00 (£140)**.

The floor space is 18x6 feet.

Net weight of engine, 2568 pounds; gross weight, 3070 pounds; box dimensions, 46x66x45 inches.

Net weight of dough brake, 667 pounds; gross weight, 967 pounds; box dimensions, 31x48x50 inches.

Net weight of mixer, 1368 pounds; gross weight, 1675 pounds; box dimensions, 76x36x52 inches.

WRITE TO US FOR FULL PARTICULARS AND PRICES ON LARGER SIZES.

THE J. W. RUGER MFG. CO.,
BUFFALO, N. Y., U. S. A.

FRANK MILLER'S HARNESS OIL.

Preserves and softens the leather, thus adding life.
The highest quality of oil on the market.



The Frank Miller Co.

349 & 351 West 26th Street, New York,

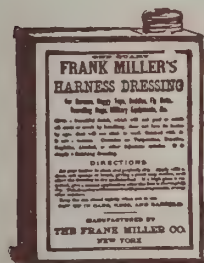
U. S. A.

MANUFACTURERS OF

Blackings and Leather Dressings.

The goods mentioned are but a few of our many preparations for leather. Write to any New York Export Commission House for our Complete Price List and Samples.

**Our Preparations Are Uniform in Quality and
Always Give Perfect Satisfaction.**



FRANK MILLER'S Harness Dressing.

Recognized as

"THE STANDARD."

Produces a brilliant jet-black gloss, which will not peel or smut, and to which dirt will not stick.



FRANK MILLER'S CROWN

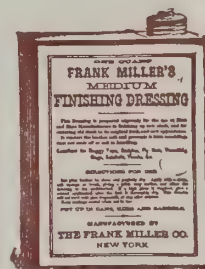
SHOE DRESSING.

For Ladies' and Children's Black Shoes. Produces a perfect finish, without injury to the finest leather. Each bottle in handsome carton.

FRANK MILLER'S MEDIUM Finishing Dressing.

For use of Boot and Shoe Manufacturers in finishing new stock, also for restoring old stock to its original fresh and new appearance.

Softens and Preserves.
Prevents Mould.
Does Not Scale Off.



The No. 7 Hardie Painting Machine

**Does the work of twenty men with brushes,
and does it better.**

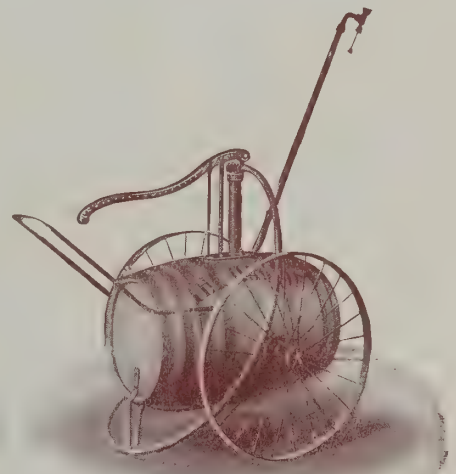
The No. 7 Hardie Painting Machine comprises a patented brass pump with brass ball valves, ingenious agitator and paint mixer, contained in a 30-gallon barrel, mounted on wrought-iron wheels, 26 inches in diameter, with 1½-inch tires, and is as easy to wheel as a baby carriage. It is equipped with 10 feet of high-grade ½-inch hose, long extension rod and special disgorging painting nozzle.

**It will save its cost in a few hours' use.
Will spread any liquid of a sprayable nature.**

SPECIAL OFFER FOR EXPORT ONLY:

Upon receipt of \$17.50, U. S. gold or its equivalent, we will box and deliver at New York City one No. 7 Hardie Painting Machine complete. Weight, 110 lbs. Packed in two cases—one, 9 cubic feet; one, 7 cubic feet.

We refer to 30,000 satisfied users of our machines.



The "Stay-There" Ready-Mixed Cold Water Paint

is composed of minerals ground in a liquid chemical, to be thinned with water. Packed in tight, iron-hooped barrels. **IT IS AS DURABLE AS OIL PAINT; will not chalk or peel off; is fireproof, waterproof, washable and sanitary.**

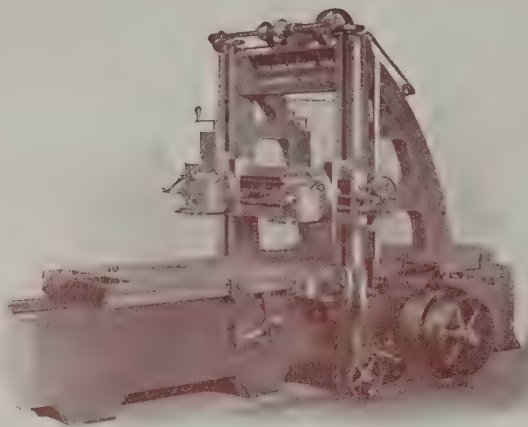
Upon receipt of **SIX DOLLARS** we will deliver f. o. b. cars at New York City **ONE HUNDRED GALLONS** of WHITE "STAY-THERE" PASTE PAINT. Gross weight, 400 lbs.; barrel, 28x28x20½ inches.

Our 1904 Catalogue, illustrating and describing the largest line of Painting Machines for every purpose, and the "Stay-There" Paint, will be mailed free to any part of the world. We will open accounts with responsible importers furnishing American references. Orders accepted through New York commission houses

THE HOOK-HARDIE COMPANY,

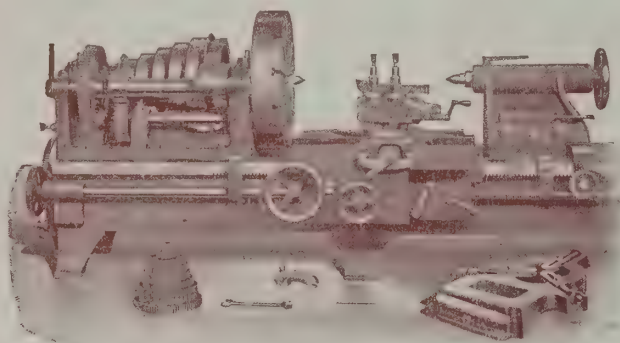
37-52 Hook Building,

HUDSON, MICHIGAN, U. S. A.



60-inch Pond Planer.

Pond Planers are built in twenty-one sizes, taking from 26 to 170 inches square between housings; for planing any length.



32-inch Pond Triple-Geared Lathe.

Pond Lathes are built in twenty-four sizes, from 22 to 84 inches swing over the ways; turning any reasonable length.

Machine Tools.

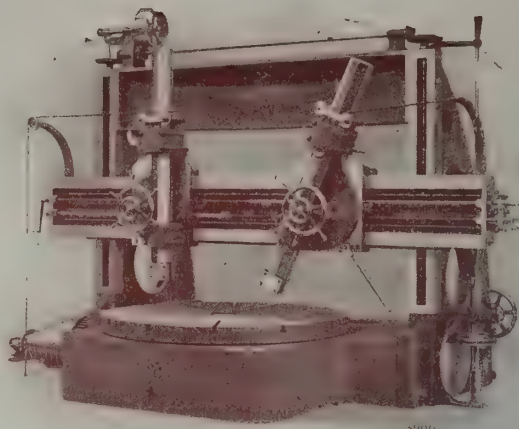
Electric Traveling Cranes.

Complete Equipments

FOR

Machine Shops, Railway Shops
and Shipyards.

Send for Illustrated Catalogue,
stating kind of machine in
which you are interested.



**10-foot Niles Boring and Turning
Mill.**

Niles Boring and Turning Mills are built in twenty-five sizes, from 30-inch to 30-foot swing.

NILES- BEMENT- POND CO.,

136-138 Liberty Street,
New York, U. S. A.

London Office: 23-25 Victoria Street.

CABLE ADDRESSES:

"Nilesco," New York.

"Niliacus," London.



26-inch Bement Shaper.

Bement Traveling Head Shaping Machines are built with one or two heads, in four sizes, from 12 to 26 inch stroke.

LANE MANUFACTURING CO.,

Montpelier, Vermont,
U. S. A.

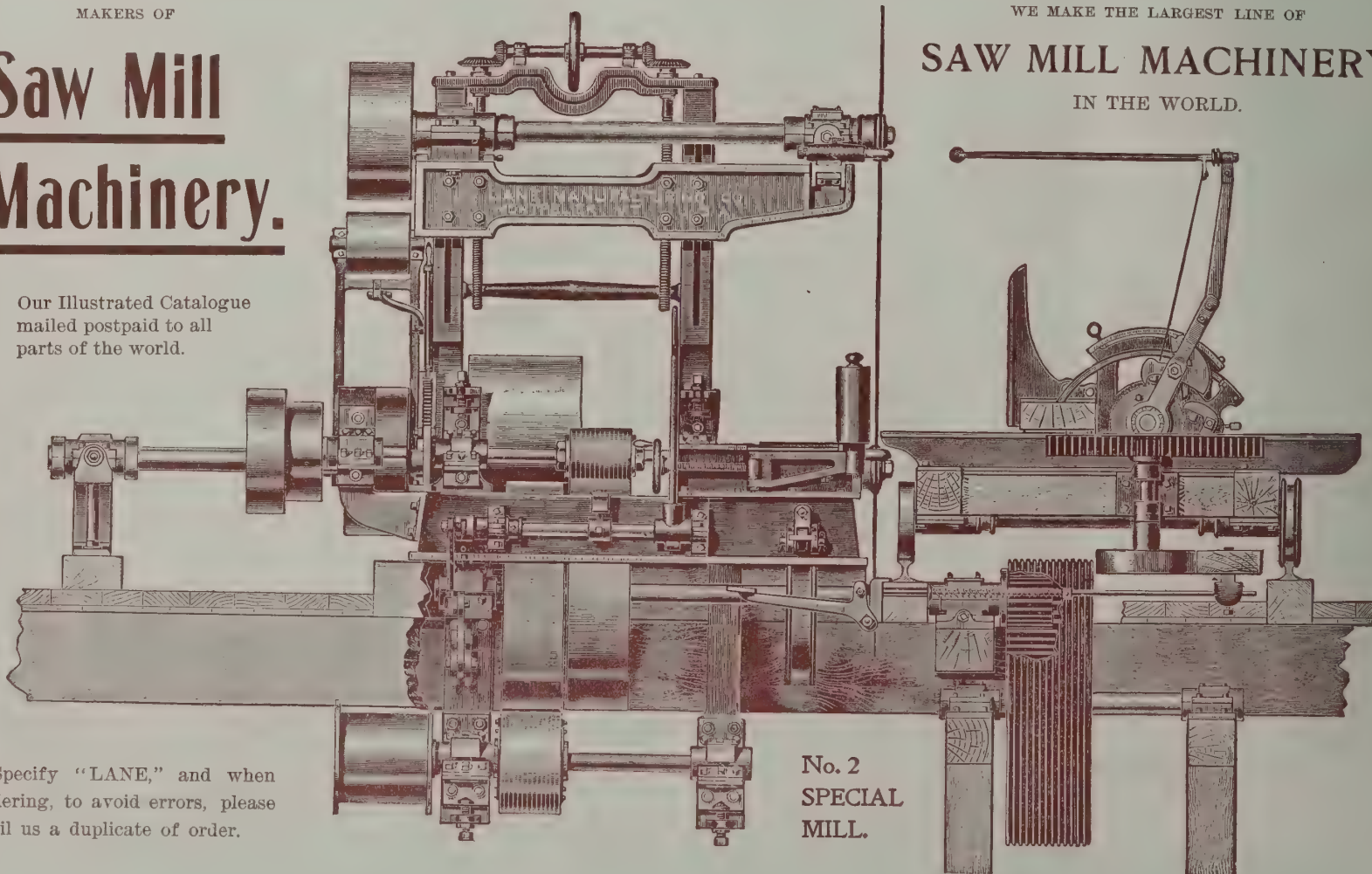
MAKERS OF

Saw Mill Machinery.

Our Illustrated Catalogue
mailed postpaid to all
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WE MAKE THE LARGEST LINE OF

SAW MILL MACHINERY IN THE WORLD.



Specify "LANE," and when
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MILL.

The American Exporter

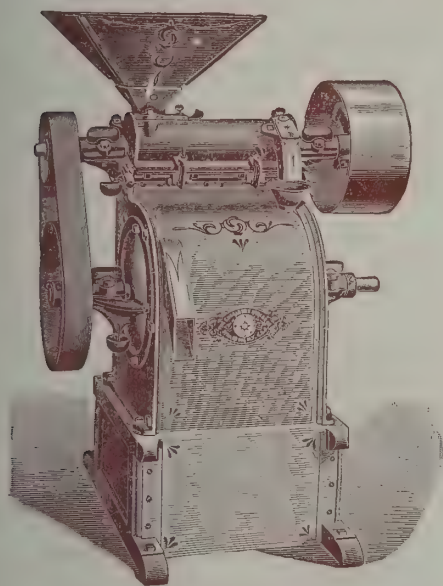
WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIII.

NEW YORK, APRIL, 1904.

No. 5.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

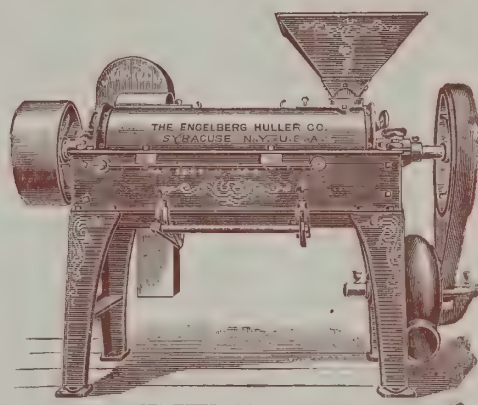


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

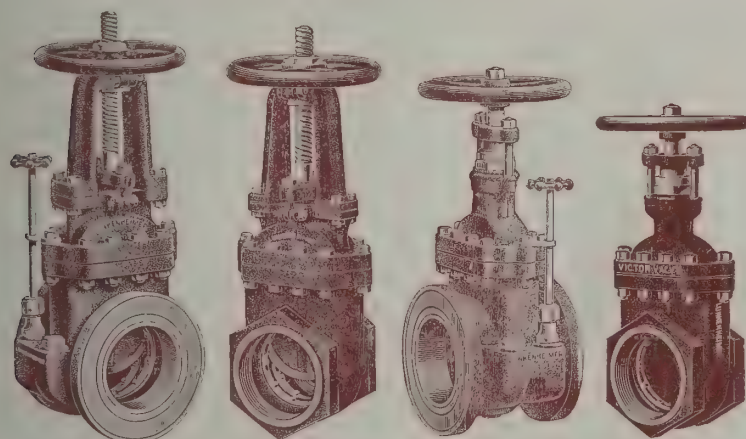
Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the Only machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.



Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

THE ENGELBERG HULLER COMPANY, P. O. Box B, Syracuse, N. Y., U. S. A.
Export Office: 339 Produce Exchange, New York City.



Flange Ends, Rising Stem and Yoke with By-Pass.

Screw Ends, Rising Stem and Yoke.

Flange Ends, Stationary Stem with By-Pass.

Screw Ends, Stationary Stem.

THE LUNKENHEIMER "Victor" Gate Valves

are modern high-pressure valves, strictly first-class and constructed to give satisfaction. Made in standard sizes, 2 inches and above, in screw and flange ends, with stationary or rising spindles, with and without by-pass, for 175 lbs. working pressure. All wearing parts made of bronze. Compact, heavy, durable, low-priced. All goods rigidly tested and inspected before shipment. Specify the "Victor" and order from your export agent. Write for Catalog of Brass and Iron Steam Specialties and Engineering Appliances of superior quality.

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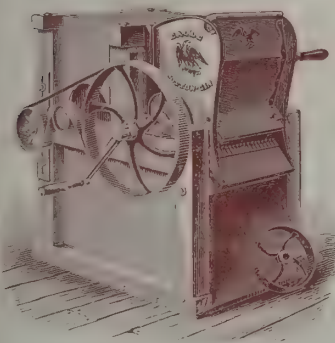
Main Offices and Works,
CINCINNATI, O., U. S. A.

BRANCHES: 26 Cortlandt Street, NEW YORK.
35 Great Dover Street, S. E. LONDON.

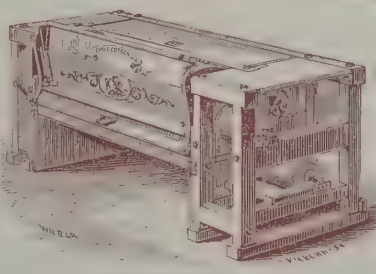
EAGLE COTTON GINS.

These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

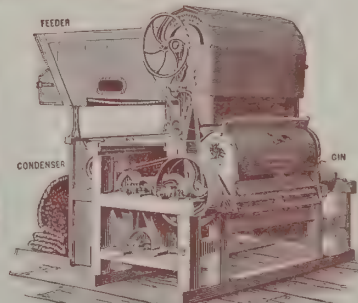
For further details illustrated Catalogues will be furnished on application.



Hand Gin.



Power Gin with 12-inch Saws.



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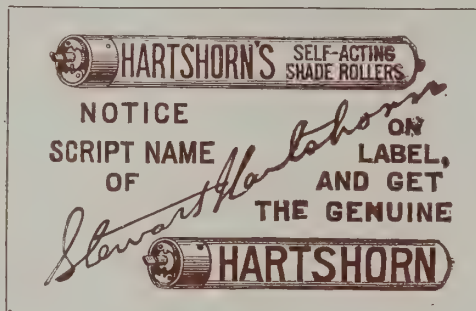
CONTINENTAL GIN CO., Inc., Successors to EAGLE COTTON GIN CO., BRIDGEWATER, MASS., U. S. A.

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A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

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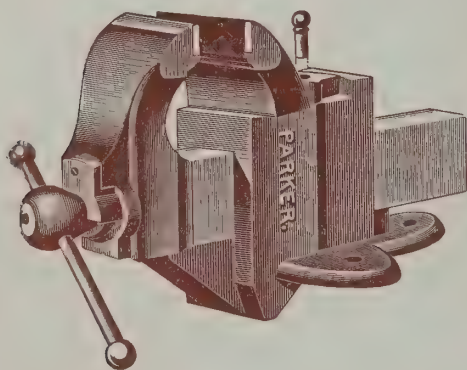
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Stockroom: No. 7 Lafayette Place, New York.



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Unequaled for
Strength, Durability
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Has stood the test of over
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EVERY VISE MADE FOR
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ONLY THE BEST MATERIAL AND WORKMANSHIP
USED IN THE MANUFACTURE OF THESE GOODS.

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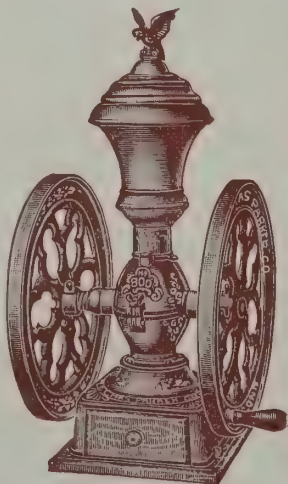
We manufacture a line of

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These lamps are made for outdoor or indoor use. They give a powerful and brilliant light, and are not affected by the wind.

They are suitable for use in mills workshops, warehouses, stables and summer resorts, or in any other place where a good light is required which will not be affected by strong breezes.

Where it is desired to light up a long row of animals or a long, narrow room of any kind, these lamps are especially desirable.

No. 30 is fitted with our patent bull's-eye lens on perforated plate, adding to the appearance of the light.

No. 30 has a blizzard globe, 1-inch wick and a bright tin reflector 12 inches in diameter. Price, \$30.00 dozen.

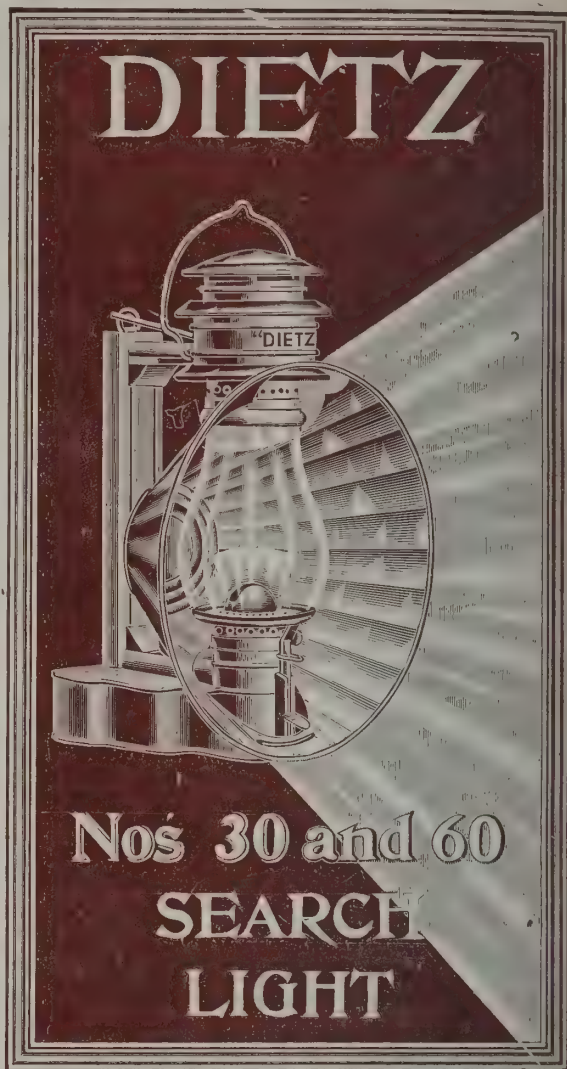
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We are pleased to send complete catalogues (Spanish or English) and price list to those interested.

**R. E. DIETZ
COMPANY,**

NEW YORK, U. S. A.

Established 1840.



ARCADE MANUFACTURING CO.

(INCORPORATED 1885)

Manufacturers of

"X-RAY," "ROYAL POUND," "CRYSTAL,"
"IMPERIAL," "TELEPHONE," "JEWEL,"
"NEW HOME" and "FAVORITE"

Coffee Mills.

ALSO

"Champion," "Handy"
and "Phoenix"

CORK PULLERS

AND

"Perfect" Lemon
Squeezers.



"X-Ray" Coffee Mill.

X-Ray, a one-pound Wall Mill of entirely new design. Easily fastened to the wall, requiring but four screws. Will grind fine or coarse as desired. Coffee always in sight.

Sample Dozen, boxed ready for steamer f. o. b. cars New York, \$3.50.

Size of box, 14x14½x21 in. Weight: gross, 60 lbs.; net, 45 lbs.

Royal Pound No. 077, the latest Wall Mill. Made of cast iron, finished in black enamel. Fancy embossed sheet-metal hopper, holding a pound of coffee airtight. **SELLS AT SIGHT. Sample Dozen**, boxed ready for steamer, f. o. b. cars New York, \$4.00. Size of box, 12½x16x20 in. Weight: gross, 56 lbs.; net, 40 lbs.

Orders received through export houses. Please mail duplicate order to us. Our illustrated catalogue mailed postpaid.

ARCADE MANUFACTURING CO., Freeport, Illinois,
U. S. A.

Hardware Specialties Manufacturers.



"Royal Pound"
No. 077.



No. 555—\$20.00.



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No. 1—\$36.00.

ESTABLISHED 1880.

GRAND RAPIDS DESK CO.

MANUFACTURERS OF

High-Grade Desks and Sectional Bookcases

FOR THE OFFICE AND HOME.



NEW DESIGNS.

SUPERIOR WORKMANSHIP.

SUPERB APPEARANCE.

Our New Line of Sectional Bookcases and Desks, recently placed upon the market, embody the results of over Twenty Years' Practical Experience in Actual Manufacturing.



Works of the GRAND RAPIDS DESK CO., Muskegon, Michigan, U. S. A.

The prices here quoted are for desks boxed ready for steamer, f. o. b. New York. Orders received through export houses. To avoid errors please mail a duplicate of order to us.

Our 100-page Catalogue, illustrating the various styles of Desks and Bookcases made by us, mailed postpaid.

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Manufacturers,

Muskegon, Michigan, U. S. A.



No. 505 1/2—\$180.00.



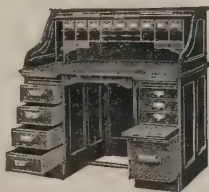
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The LEONARD Cleanable Refrigerators.

Freely Acknowledged to Be the Best in the World.

Made in GRAND RAPIDS, MICH., U. S. A.

Seven walls to save the ice. Air-tight locks. Sliding, adjustable shelves, and many other improvements. Outside cases, ash with quarter-sawn oak panels, dark golden finish. Walls packed with mineral wool. These prices F. O. B. New York, Boston, Philadelphia or Baltimore, crated for export. The sizes given are: first, width across the front; second, depth from front to back; third, height. All outside measurements in inches.



Single door, zinc lined.

No. 70—Size, 25x17x40.....\$7.19

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No. 72—Size, 35x20x46.....\$12.50

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Apartment House, zinc lined.

No. 93—Size, 27x18x49.....\$10.60

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No. 96—Size, 36x24x68.....\$20.45



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Apartment House, zinc lined.

No. 95—Size, 38x21x45.....\$12.16

No. 96—Size, 35x22x53.....\$14.50



Four doors, zinc lined.

No. 98—Size, 38x22x48.....\$17.75

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Six doors, zinc lined.

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Double doors, lined with real Porcelain on sheet steel.

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Three doors, lined with real Porcelain on sheet steel.

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Four doors, lined with real Porcelain.

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Four doors, lined with real Porcelain on sheet steel.

No. 57—Size, 47x28x60.....\$40.75



No. 323—Grocer's Refrigerator; wood lined, polished oak cases.

Roll top for butter firkins; storage below. Ice in top at rear.

No. 322—2 rolls; size, 46x41x84.....\$65.00

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No. 324—4 rolls; size, 90x41x84.....\$105.00

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GRAND RAPIDS REFRIGERATOR CO., Grand Rapids, Mich. U. S. A.

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For Electrotypes, Coins, Minerals, Specimens of Natural History, Proofs, Engravings, Tools, Laces, Jewelry, Dental Supplies, Etc. Made of golden finished oak. Each section has 10 drawers 1 1/2 in. deep and is 36 in. wide, 24 in. deep and 10 in. high. Price, f. o. b. cars New York, each Section, \$6.00; Top, \$1.00 extra; Base with Casters, \$1.50 extra. Weight, boxed ready for steamer, 100 pounds.

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A convenient method for filing and classifying over one thousand Catalogues, Circulars, Etc. A Cross Index System accompanies each Cabinet. Made of golden finished oak, highly polished. Size, 32 inches wide, 24 inches deep and 63 inches high. Mounted on strong ball-bearing casters. Price, f. o. b. cars New York, \$27.75. Weight, boxed ready for steamer, 375 pounds.



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LEONARD MANUFACTURING CO., Grand Rapids, Mich., U. S. A.
New York Office, 54 Warren St. E. L. D. HESTER, Manager.

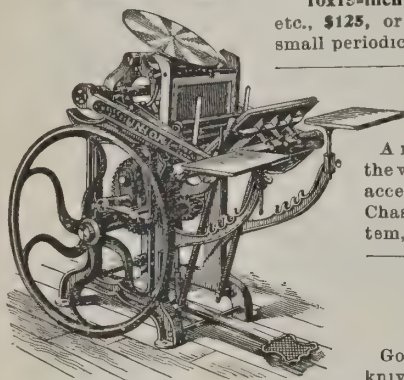


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Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

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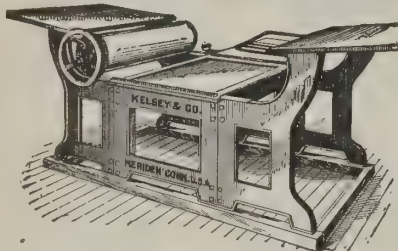


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C. L. HAUTHAWAY & SONS,

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Regular 4-oz. Bottle.

Best dressing put up and warranted in all respects.



Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

For polishing patent leather shoes quickly and without injury to the leather.



"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the



WHITE LILY WASHER. WASHES LILY WHITE.

White Lily Washer.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is 2 3/4 turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** (\$30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**

Weight, 600 lbs. Measurements: 18x24x24 inches.

WHITE LILY WASHER CO.,

MANUFACTURERS,
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LOVELL MFG. CO.

Erie, Pa., U. S. A.

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Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS, RAT and MOUSE TRAPS.



Send for Catalogue and Prices.



We make a full line of
CLOTHES WRINGERS
for the Export Trade

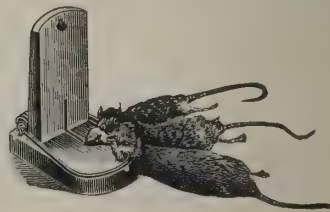


Delusion Mouse Trap.



Rex Trap.

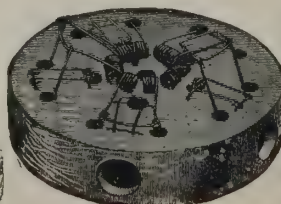
Made in two sizes:
large size for rats;
small size for mice.



Erie Rat Trap.

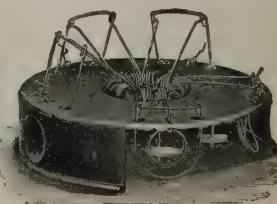
Best Trap on Earth.

RAT TRAPS.—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch,"
MOUSE TRAPS.—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker,"
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Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of
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in English only
and of Rat
and Mouse
Traps in both
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Lovell's Easy-Setting Metallic Mouse Trap

BORN & CO.**Columbus, Ohio, U. S. A.**


ONE OF A DOZEN
good reasons why
you should drink
Born's
XX PALE BEER
is because it is
brewed from the
best materials.
A GOOD SPRING TONIC.

We are prepared to ship in any quantity, and earnestly solicit your orders direct to our offices, or through any responsible export merchant. Satisfaction guaranteed.

BREWERS and EXPORTERS of

BORN'S CELEBRATED XX PALE and MUENCHNER BEERS.

The Absolute Purity and Superior Flavor of Our Beers
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For Immediate Delivery We Make Introductory Offers as Follows:

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3 doz. quarts Born's Muenchner, packed in barrel	\$10.00
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5 doz. pints Born's Muenchner, packed in barrel	\$10.00
5 " " " XX Pale " " " " " " " "	net cash, F. O. B., N. Y.

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6 doz. quarts Born's XX Pale, or 6 doz. quarts Born's Muenchner, packed in barrels, \$10.00 net cash, F. O. B., N. Y.
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FOREIGN DEPARTMENT:

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MANUFACTURERS OF

Railway Freight, Plantation, Industrial and Mining Cars.

We also make Special Cars for all purposes, from designs furnished,
or will furnish our own designs upon request.

FOR FOREIGN MARKETS.—Our Cars are taken apart
and packed for shipment according to the best known
methods.

Our Catalogue (English and Spanish), illustrating and describing
the various styles of STANDARD CARS made by us, mailed postpaid.

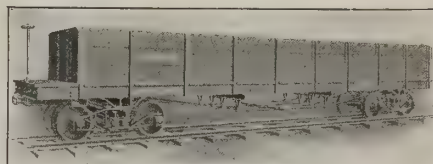
Please mention THE AMERICAN EXPORTER.



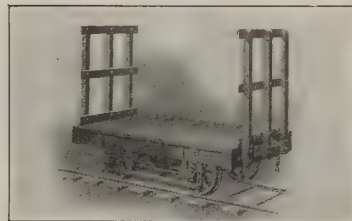
ALL-STEEL FLAT CAR.



CUBAN CANE CAR.



GONDOLA CAR.



PUERTO RICAN CANE CAR.

Desk-Top Filing
Cabinet No. 210.**FILING CABINETS FOR MEMORANDUMS, CLIPPINGS AND MSS.**

"A MENTAL SAVINGS BANK."

The most convenient device for filing and classifying clippings, illustrations, manuscripts relating to Engineering subjects, etc.
It is the acme of simplicity and ready reference and a stimulus to the busy man by reason of the accuracy and facility with which
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FOR EXPORT ONLY.

UPRIGHT FILING CABINET No. 320—Our Most Popular Cabinet—is 5 feet high, 26 inches wide and 12 inches deep;
contains 300 files. Weighs, boxed, 130 pounds. 13 cubic feet. \$21.25

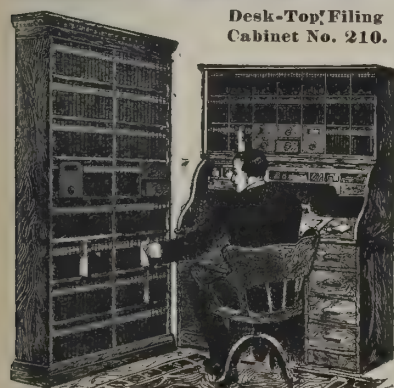
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Weighs, boxed, 95 pounds. 7½ cubic feet. \$14.75

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THE LIBRARY FILING CABINET COMPANY,

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WE ALSO MAKE FILING DEVICES IN SECTIONAL AND SOLID CABINETS.



Upright Filing Cabinet No. 320.

ESTABLISHED 1866.

Paints and Varnishes OF ALL DESCRIPTIONS

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HOUSES, BARNs,
FACTORIES, FENCES,
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CARS, TANKS, Etc.



WHITE LEAD,
COLORS,
ENAMELS, STAINS,
DRYERS, ASPHALTUMS,
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For Removing Dust, Smoke, Steam, Heat, Foul Air, Gases. For Drying and Ventilation.

Branches in
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SOLE AGENTS IN SCANDINAVIA:
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BARNEY VENTILATING FAN WORKS, Dept. E, = Boston, U. S. A.



UPPER LEATHERS



SHOE UPPERS.

The American Shoe Manufacturers' Export Company begs to announce that its **LEATHER DEPARTMENT**

is prepared to furnish all kinds of leather for the manufacture of shoes of every description, in large or small quantities. Careful selections; packing in any manner desired and prompt shipments guaranteed

Send us samples of what you use and let us quote prices.

Our Shoes Are Famed All Over the World.

We make more than 500 different kinds for men, women and children—from the cheapest to the best. We also manufacture Shoe Uppers, that is the shoe complete without soles or heels. Send for samples. See above cut.

Our **DIAMOND BRAND SHOE DRESSINGS** are the best on the market, but priced lower than other makes.

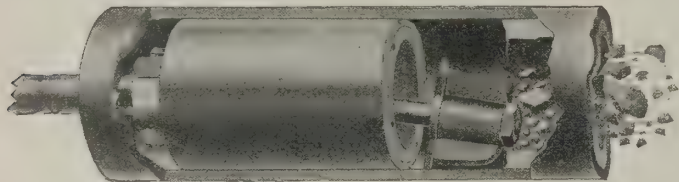
BLANCOLA is a liquid dressing for white canvas shoes that wins favor on sight.

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President: FRANK BORNN, of Borinn & Co., Exporters and Importers, New York, U. S. A.

Why Do You Continue to Burn Up Money?

FROM 20 TO 60 PER CENT. SAVED IN FUEL.



(For Water Tube Boilers)

The same machine can also be used for return tubular boilers, which is provided with a hammer instead of cutter as it appears on this cut.

DIAMOND BOILER TUBE CLEANER.

The only known and successful device for removing scale and soot from return tubular or water tube boilers. Same machine can be used for both styles of boilers by changing the hammer. From 20 to 60 per cent. in fuel saved; prolongs the life of boilers, and is the means of avoiding possible accidents. Our Diamond Cleaner is used by engineers in almost every part of the world, to whom we can refer you. Every Diamond Machine bears this trademark and is also stamped with our name.

None genuine without our trademark.

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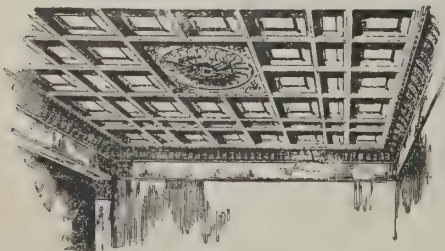
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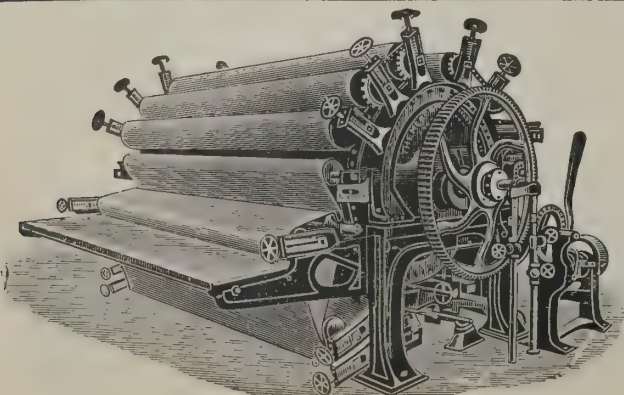


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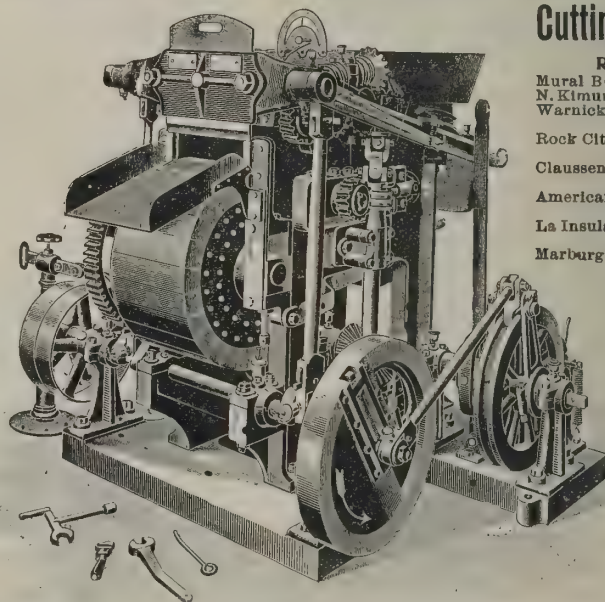
All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of Sydney, Melbourne, Adelaide, Barcelona and Paris, for novelty, workmanship, finish, simplicity, utility and cheapness.

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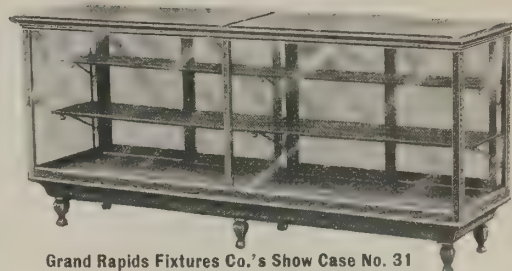
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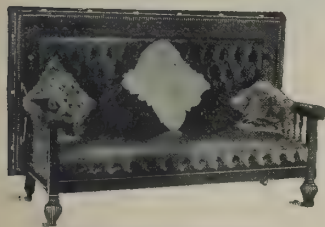
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BALKE MANUFACTURING CO.,

Patentees and Manufacturers of

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INCORPORATED \$100,000.



Style "A," as a Davenport.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note—The prices here quoted, U. S. Gold or its equivalent, are for Foreign Markets Only, and include boxing ready for steamer, delivered f.o.b. cars at New York City.

Style "A," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

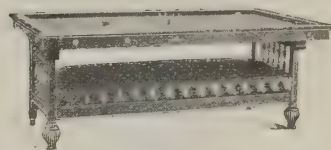
Style "A," converted into a Billiard or Pool Table, has a playing surface of 3½x7 feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, \$95.00. Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: 4'x8'x6'; 32"x36"x6'.

Standard Billiard Tables.

"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4x8 feet. Price complete, \$125.00. Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: 4'2"x8'2"x8'; 4'x8'2"x2'.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, 3½x7 feet. Price complete, \$90.00. Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: 4'x8'x8'; 3'6"x6'2'.

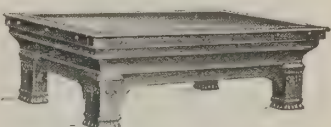
Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order. Our catalogue, illustrating and describing the various styles of Billiard and Pool Tables manufactured by us, mailed postpaid.



Style "A," converted into a Billiard Table.



Benedict Special Billiard Table.



"Den" Special Billiard Table

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White Enamel Refrigerator Co.,

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Owners and Manufacturers of

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The Bohn Dry Air Syphon System insures a low and uniform temperature, ranging from 38 to 48 degrees Fahrenheit. With our Enamel Lining, you need only to wipe the food compartments with a damp cloth to clean perfectly. The only absolutely sanitary refrigerator made.

Adopted and used exclusively by the Pullman Company for all of their Dining and Buffet Cars. Pennsylvania Lines, New York Central, Michigan Southern, Union Pacific, Canadian Pacific and all other railways throughout "the States" and Canada as well as by thousands of homes, hotels and clubs.

For Foreign Markets Only.

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No. 2. Style "A." Panel Door. Price, \$23.00. Outside measurements (inches): Width, 38; depth, 21; height, 44. Weight, boxed, 278 pounds.

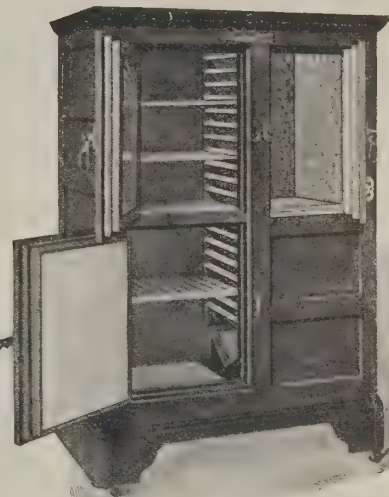
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No. 2. Style "A." Panel Door.



No. 3½. Style "D." Panel Doors.

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The Watrous Combination Bath Fixture.

This fixture supplies hot or cold water or any desired mixture, by simply turning the handle to the right or left. To empty bathtub, simply lift the handle.

It is the only perfectly sanitary bath fixture made, as the tube is always filled with clean water direct from the supply instead of from the tub, and therefore impossible to become foul.

Has an independent supply passage direct to tub. Can be attached to any bathtub. Is constructed with ordinary Fuller balls. Is simple, cheap, durable and heavily nickel-plated.

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One (1) Watrous Aquameter Water Closet, complete (Fig. "A 4.") as shown. Six (6) cubic feet. Weight, 100 pounds. \$30.00

One (1) Combination Hot and Cold Water Bath Fixture, as shown. ¾ cubic feet. Weight, 17 pounds. \$15.00

Our sanitary specialties are protected by U. S. and foreign patents.

Our illustrated booklet mailed, postpaid, to any part of the world.

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The Watrous Aquameter Water Closets.

Adopted by The Pullman Company and all important Railway and Steamship Companies in the United States.

These closets have no equal for Public Buildings, Residences, Steamships, Private and Parlor Cars.

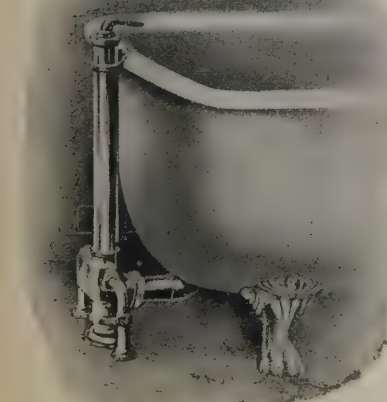
The closet shown operates perfectly with ½-inch or ¾-inch pipe, according to pressure.

Connected direct to service pipe, without any tank. Uses from one to three gallons of water to each flush. Saves 50 per cent. in water bills. Noiseless and positive in action. Neat and durable. Successful everywhere. Fully guaranteed. Thousands in use everywhere.



Figure "A 4."

Watrous Aquameter Water Closet.



Watrous Combination Hot and Cold Water Fixture.

THE WATROUS COMPANY, Manufacturers, CHICAGO, U. S. A.

GEO. L. SQUIER MFG. CO. OF BUFFALO,

Manufacturers of
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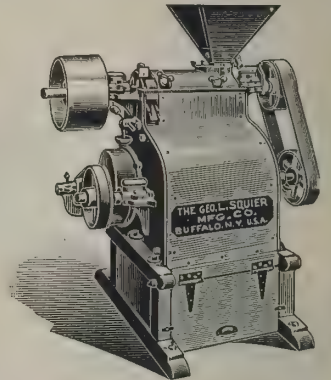
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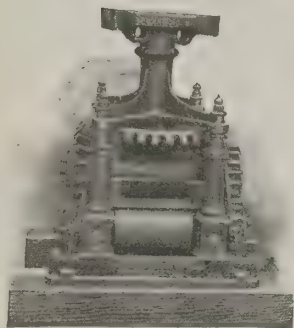


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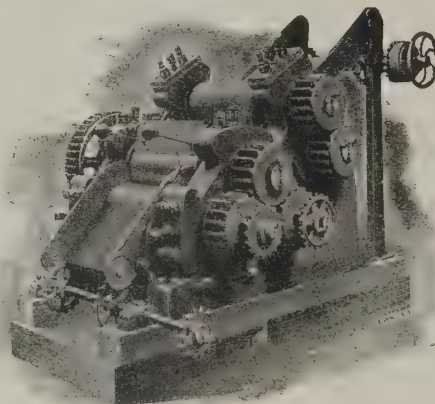
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Capacity 4,000 to 6,000 pounds
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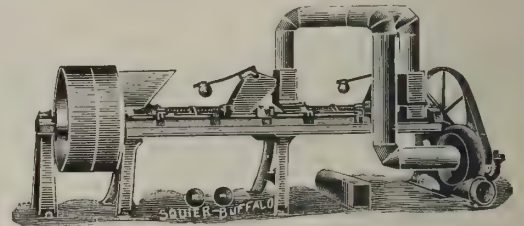


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"CUBA" Three-Roll Mill and Two-Roll Crusher. All sizes.



"AMERICAN" Coffee Huller No. 3.

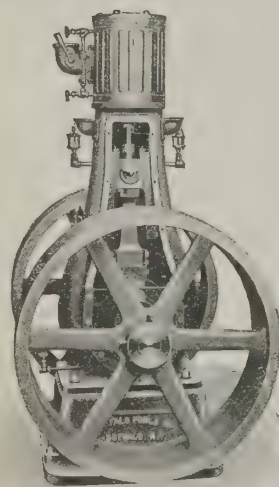
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60-types and sizes-60
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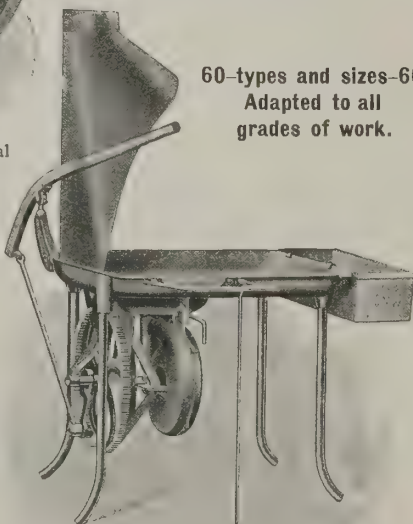
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Excel in
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BUFFALO STEAM PUMPS.

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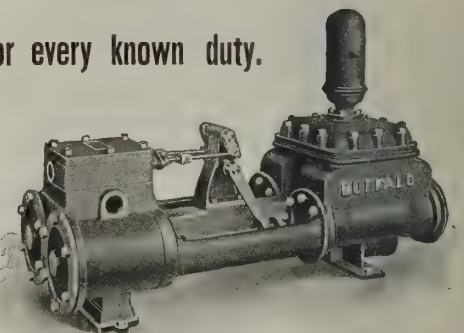
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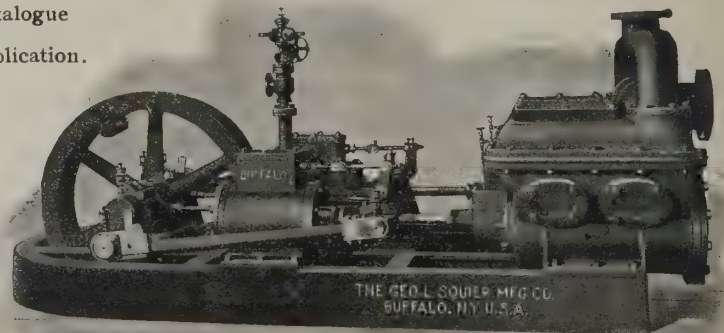
WATER, JUICE AND
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HIGH-GRADE STEAM AND POWER PUMPS.
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"BUFFALO" Boiler Feed Pump.



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WITH WHICH IS INCORPORATED

THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by HOWARD LOCKWOOD & Co., 1877].

THE JOHN C. COCHRAN COMPANY, - - - Publishers
Bennett Building, New York.

EDWARD W. DREW, - - - Editor.

Published on the 1st of each month.

Subscription, to any part of the world, \$2.00, or an equivalent sum in any other currency. Single copies, 20 cents each. Advertising rates on application.

Entered at the New York Post Office as Second-class Matter.

FOSTERING FRIENDLY RELATIONS.

BARON VON STERNBURG, the German Ambassador to America, is a conspicuous example of the useful diplomat. It was not so very long ago that members of the diplomatic corps concerned themselves chiefly with matters that were purely political, but a new era has dawned in that respect, and the representative of the Kaiser is fully alive to the progress of international sentiment, if, indeed, he is not slightly in advance of his confrères in doing all that he can to promote the mutual best interests of the country he represents and the one to which he is accredited. In a letter to the editor of this journal the Ambassador had this to say, in part:

"The information you are spreading will not only help us to understand ourselves better commercially, but it will also aid in fostering good relations, which, as history has shown, are the foundation of prosperous trade, and that is what we are both looking for. With hearty wishes for success in your efforts and for the success of THE AMERICAN EXPORTER."

We owe an apology to the Baron for using this extract from his letter, but it exhibits so characteristically the interest which he takes in international trade as it affects not only his own country and ours, but others, that the liberty may be excused for the good that it is sure to do in showing the new trend of diplomacy in the direction of fostering the commercial prosperity of the world, instead of being content with discussing, manipulating and endeavoring to dispose of purely political matters. With Baron von Sternburg at Washington there can be no question as to the pleasant relations that are certain to continue to exist between the two countries.

FRIENDLY TO BOTH NATIONS.

CABLE accounts of the progress of the war between Russia and Japan received in New York have been unsatisfactory and at times misleading. The conflict is one which all friends of progress hoped would be settled diplomatically. Wars are costly to countries that engage in them. They are detrimental to commerce, and are to be deplored from every point of view. We have no doubt that each party to the strife believed no other course could be taken with a proper regard for national honor, and we will not undertake to discuss the merits of the controversy which provoked the resort to force of arms.

We refer to the subject chiefly because through misrepresentation a false notion of the attitude of the United States in regard to the countries involved in the strife has gone abroad. We do not believe that there has ever been a war concerning which so many untrue statements have been printed, not only as to the war itself, but as to the interest in it taken by all powers, including the United

States. The American Government did all it could do consistently to prevent hostilities, and, as we chronicled last month, when it was found the war could not be averted, it did everything possible to restrict the sphere of hostilities. It was obviously something in which our Government could not take one side or the other, and any assumption that it has done so is based upon nothing at all in the way of an excuse for a foundation.

As a matter of fact, the people of the United States feel friendly to both nations. There are exceptions among men and newspapers, who may espouse the cause of either Russia or Japan, but partisans of this sort can be compared to grains of sand upon a thousand miles of ocean beach. The bulk of the American people cannot and will not become involved, either sympathetically or otherwise in the controversy. They abhor war, they are firm believers in the principle that peace and progress are, in fact, synonymous terms.

Russia has been very friendly to us; so has been Japan. We feel friendly to both. We shall still feel so after the war is over, regardless of what hot-headed persons may say in any one of the three countries which are now under consideration.

The war is bound to interfere with trade and commerce so far as it affects the two countries involved, but in this particular instance it is quite likely that the world's commerce in the calendar year will be larger than ever before, although the commerce of the countries involved in what promises to be a protracted strife may suffer to an extent that will be ruinous to many of the Japanese and Russian merchants. It is to be hoped that the war will be quickly ended, but at this writing there is no probability of an early conclusion of the unfortunate suspension of trade and diplomatic relations.

During it all America may be placed, figuratively speaking, in the position of a sister who sees two of her brothers fighting. She likes both of them; she may think both are right or that both are wrong, but after doing all she could to prevent the encounter it is not within her province to aid either brother. "Fair field and no favor" seems to be the generally accepted view of the conflict in America.

CONSUL-GENERAL SKINNER, U. S. A., stationed at Marseilles, France, has made an elaborate report to the American Government regarding the success of his mission in negotiating a trade treaty with King Menelik, of Abyssinia, due mention of which was made in the last issue of THE AMERICAN EXPORTER. The American Consul-General's report tells in detail about the flattering reception with which he met and the successful outcome of his mission, which opens a region containing a population of about 10,000,000 souls to American commerce, provided the treaty be ratified by the United States Senate. Mr. Skinner has faith in the future of King Menelik's country, and believes that it is destined to become a much more important factor than it is at present in international trade. The Consul-General performed his duties in carrying out the work of his mission with rare discretion and excellent judgment, which was no more perhaps than was expected from a consular officer with his high reputation for diplomatic efficiency.

A WRITER in the *Engineering Magazine* asks whether the multiplication of machinery is making specialists of workmen in restricted lines and whether it is tending to put the old-time versatile mechanic out of business. The writer points out how the mills supply, ready made, most of the material that carpenters used to have to make themselves. This condition, however, is true of other industries. In America at the present time the man who continues to be "old-style," whether he is a "versatile" mechanic or anything else, might just as well move to the North Pole. The tendency of the age is to the specialization of work of all kinds, but the man who makes a good specialist is usually one who has grown up in the business in which he is engaged and who could display some versatility if occasion made it necessary. There is no longer any room in America for the man who is a "Jack of all trades and master of none," unless he possesses an independent fortune, which is properly protected against his own inclinations.

NEW VIEW OF OUR EXPORT TRADE.

SECRETARY CORTELYOU, of the Department of Commerce, presents in a report recently issued some very interesting features of our foreign trade. From this report it appears that more than one-half of the exports from the United States in 1903 went to British territory, and practically one-third of the imports into the United States came from British territory. Our total exports to British territory in the calendar year 1903 were \$768,000,000, or 52 per cent. of our total exports, and our total imports from British territory \$308,000,000, or 31 per cent. of the total, speaking in round terms. By British territory is meant the United Kingdom and its colonies, dependencies and protectorates. The territory included under this designation of the United Kingdom and its colonies, dependencies and protectorates, contains over 11,000,000 square miles, or more than one-fifth of the land surface of the globe, and has a population of 400,000,000, or one-fourth of the population of the world.

The largest exportation to British territory, of course, was to the United Kingdom—\$543,000,000—and this was the largest exportation to any single country. Next in order of magnitude of exports to British territory was Canada, \$131,000,000; British Australasia, \$32,000,000; British Africa, \$28,000,000; British West Indies, \$10,000,000; Hongkong, nearly \$10,000,000; India, nearly \$5,000,000, and the remainder scattered through the smaller British dependencies.

Of the foreign commerce of the United States, aggregating nearly \$2,500,000,000 in the calendar year 1903, more than \$1,000,000,000 represented commerce with British territory. Next in order of magnitude of commercial transactions with given countries is Germany, to which our exports in 1903 were \$225,000,000. It is a fact, however, that our commerce with Germany has grown much more rapidly in the last decade than that with the United Kingdom.

Canada stands third in the order of magnitude of exports from the United States, though that country has been included in the general discussion of our commerce with British territory. Our total exports to Canada in 1903 amounted to \$131,000,000, an increase of about 130 per cent. in the decade. France is fourth in the magnitude of its commerce with the United States. Netherlands is next in the list.

Considering the commerce of the United States by grand divisions, that with Europe is, of course, first in order of magnitude. Our exports to Europe grew from \$680,000,000 in 1893 to \$1,087,000,000 in 1903.

DURABILITY OF AMERICAN GOODS.

ONE contributing reason to the growth of the exports of American goods in manufactured lines, especially in agricultural machinery, seems to have been lost sight of by all the writers on the subject. They tell their readers about the general excellence of our articles for export, but they never seem to say anything upon a point which has been noticed by so many of our foreign readers. We refer to the durability of manufactured articles sent abroad from this country. It is a subject to which we have referred incidentally in previous issues, but it is of so much importance to the purchaser that it seems well worth more attention than we have heretofore given it.

There was a time when our manufacturers engaged in the export trade did not take into consideration the needs of their customers to the extent which later on they found reason for doing. In the matter of agricultural implements, for instance, there was a time, long ago, when the same sort of agricultural tools would be sent everywhere, regardless of the requirements of the purchasers, and we may admit that quarter of a century ago some of the men who controlled the manufacture of these articles were not so intensely alive to the necessities of their customers, both at home and abroad, as they are at present and have been for several years.

One American concern engaged in the manufacture of agricultural implements has spent thousands of dollars in an earnest endeavor to solve the problem of durability. That it has solved the problem is shown in the great increase in its trade, paradoxical as

it may seem to say so. Other American concerns have taken up the matter, and our manufacturers generally have profited by the inquiries, investigations and practical improvements in products which have followed. There once were manufacturers who built cheaply to sell their wares. There may be a few of them left, but men of that description are unknown to purchasers of American goods who read only THE AMERICAN EXPORTER. Only firms of known integrity and thorough reliability are admitted to its advertising columns.

With responsible firms in America, the period has long since passed when articles of trade were made merely to sell; and to sell again as quickly as possible to the same purchaser. Take a plow, for instance. Once it was a question of selling a new plow as frequently as possible to the same customer; now it is a matter of making such a durable plow that the customer's neighbors will be attracted and will buy the extra plows, while the original purchaser will do his work for a much longer time, at relatively much less expense, with the same implement. Plows, like everything else, must wear out eventually, but with proper care those made in America will outlast anything that can be procured anywhere.

This principle of making durable articles is fully appreciated by nearly all American manufacturers. They have realized that durability is quite as essential as a reasonable price, and have acted accordingly. It was thoroughly American for them to come to that determination, and we are quite sure that the growth of our export trade is due in a great measure to carrying out this view of fairness and honesty in business methods, which is thoroughly characteristic of the large majority of American merchants.

BUILDING THE PANAMA CANAL.

COMMISSIONERS to supervise and superintend the construction of the Panama Canal have been appointed by the United States Government with commendable promptness, and the make-up of the commission is thoroughly characteristic of the sagaciousness of the American authorities, for the members were chosen not for political or personal reasons, but on account of their eminent fitness for their duties. The chairman, Rear-Admiral Walker, retired, of the United States Navy, has been identified for many years with the investigations and work of the American Government in connection with various plans for a canal across the Isthmus of Panama, and he is probably the best-informed man on the subject in the United States. Considering his experience, it is scarcely necessary to say more than that he is now at his best period of usefulness and that he has the mental and physical vigor which are necessary to reinforce his ample and ripe experience.

The law required that of the seven commissioners four should be skilled in the science of engineering, but the appointing power has done even better than that, for six members are expert engineers of more than ordinary distinction in that profession, and some of them have international reputations. The work of constructing the canal will not lag. In fact, it has been progressing under American auspices for nearly a year, but now fresh impetus will be given to it, and the new commission will see that nothing is left undone that will hasten the completion of the new short cut between New York and Australia.

The promptness with which the American Government has acted in this matter is a substantial and gratifying vindication of the position taken by THE AMERICAN EXPORTER early last year when the United States authorities awaited the action of the Colombian Government with such marvelous patience that we were asked by several of our correspondents abroad, particularly in Australia, as to whether the United States was going to do anything or not. We assured our friends that the United States would build the canal regardless of opposition, and that this important step in international progress was not so far in the future as it then appeared to be.

AUTOMOBILE railway trains are all very well in their way, but they will never replace the regular railway trains run on rails, for neither speed nor safety can be secured to an extent that will make them competitors of the vehicles which use the rails.

WORTH OF AMERICAN WORKMEN.

THOUSANDS of our readers abroad can testify to the excellence of the work of American workmen, as shown in our manufactured products, which they have examined and tested. The workmen receive higher wages than are paid in corresponding positions in most other countries, and according to a writer in the *World's Work*, they produce results which warrant such payments for their producing efforts. We are not accustomed to make unfavorable comparisons between our methods and those of other countries, and do not do so now, but some of our thoughtful readers will be interested in what the *World's Work* has to say on the subject, which is, in part, as follows:

"Some employers ignore the fact that the American wage-worker is the swiftest and most efficient producer of wealth in the world. American manufacturers who have started factories in Europe testify to the great difference between American and European workmen. For instance, an American match manufacturer, who is now doing business in Germany, says that German workers are so slow that his matches cost him as much as if they were made in this country. He says:

"I pay much lower wages than those paid for the same class of work in America. But the difference is offset to a large degree by losses of time due to the shutting down of the plant in the forenoon and afternoon for meals, by the frequent holidays in Germany, and by the smaller amount of work turned out by the men in a day."

"The cost of printing cotton is half a cent in England and one-twentieth of a cent here. The Massachusetts factory worker gets 8 per cent. more wages than the unorganized workers of South Carolina, but the Massachusetts man produces in a year \$715 more than the other for his employer. Shoemakers in Austria get \$7 a week, while in Lynn they get \$12. But the labor cost of shoes is more than twice as much in Austria as in Lynn. This proves that workers as well as wages should be compared."

In some lines of effort that would more particularly interest our readers comparisons are difficult, and we only quote what the *World's Work* says as a matter of contemporaneous interest. The growth of our export trade testifies to the real worth of the goods we sell, regardless of what the workmen may be paid for their labor. At the same time, thoughtful purchasers are apt to ask why American manufacturers can sell such excellent articles at such reasonable prices in the face of the higher cost of labor which they must meet and pay. The answer is easy and simple: It is in the atmosphere of the United States. The average American workingman, even if he is of foreign birth or extraction, is imbued with the progressive spirit of the country. We have no place for drones anywhere in the workshops of America. The men who measure their minutes of work with the idea of allowing their employer to get as little out of them as possible are not numerous. The employers who *drive* their workmen are fewer still. There is generally a spirit of honest reciprocity. The employers expect the men to "make good"—to use a colloquial expression—but they will not drive a man. Men who require driving are undesirable everywhere, and a few dismissals—perhaps one—will change the tenor of most men's view of what they ought to do. Employees who may not be satisfied from some points of view and who are at all observant find that promotion lies chiefly in doing their work quickly and well. They may have to wait for the promotion, but the sensible ones soon lose sight of imaginary grievances and show the necessary interest in their work with correspondingly good results. There is really something in the American atmosphere that breeds energy and progressiveness. Of course, Americans get much of the resultant benefit, but the purchasers abroad of our manufactures share equally with us, for they are getting in every instance the very best article that can be produced for the money charged for it.

PORTO RICO continues to exhibit increased evidences of the prosperity that began when the island was annexed by the United States. The commerce between the two countries has increased in the five years from \$4,000,000 to a trifle more than \$20,000,000.

ART OF MAKING RAZORS.

RAZORS, a few years ago, could not be made satisfactorily by Americans. There seemed to be some subtle artifice in the production of perfect blades that was inherent in and exclusively possessed by the makers in the countries of the Old World. The production of razors has been called an art; it may also be called a science. The perfect razor, at any rate, is to all men who use it a highly developed product of the arts and sciences combined. Other men can never appreciate what the perfect razor means, nor can men who have not experimented in their production have any idea of the difficulties involved in tempering the blades so that they will hold the edge and do duty in a way that will afford not only comfort but gratification to the person who finds it needful to shave.

Attempts to make razors have been made for many years in America, but it was not until within the last five years or so that the efforts resulted in the production of anything more than second-class blades, or even more inferior ones. A razor that is not first-class is next to useless. It is a source of trial and tribulation. It is something that would drive some men to desperation. But all of these incitements to profanity are now to be banished, for American razors are becoming so good in temper and quality that they no longer jar the nerves nor spoil the tempers of their users. Temper is everything in the razor industry. The steel must be properly tempered to keep its edge and do its work. Experts now say that the Americans have at last been able to temper the steel to the proper color and that they are producing goods that hold their own with the best of foreign workmanship. The industry in America has made wonderful developments in the last five years, and the results are a tribute, not altogether unexpected, to the perseverance and pertinaciousness of the artisans who have been engaged in trying to solve the secret of the craft. The reader who is unfamiliar with the work can scarcely realize the intuition, to say nothing of the skill, which a razor-maker must possess. He must be able to tell the precise moment when the changing color of the steel is going to point to ruination for the blade, rather than to the perfection which he seeks. To one who has watched it, the tempering of steel seems to be more of an art than anything else. It is as fascinating as many of the transformations that chemists accomplish in their laboratories, and the success or failure of the efforts of the artisan who tempers a razor blade no less depends upon what may be called providential foresight and instant appreciation of the reactionary effects of the material handled than does the safety of the chemist depend upon his knowledge of the forces with which he is working.

The industry in America has not yet reached the export stage. Our artificers have only just begun to convince their fellow-countrymen that they can make as good razors as can be produced anywhere in the world. People who are familiar with the industry will recognize that it is an important step in the industrial progress of the country, and it is for that reason alone that we give the subject so much attention at this time. When those engaged in the industry are prepared to enter the world's markets due information will be given to our readers.

POSTAL receipts give a reasonably good idea of the prosperity of a country. The fifty largest post-offices in the United States showed a net gain for February of \$187,550 over the same month last year. The New York office exhibited an increase of nearly 10 per cent., and the average was close to 3 per cent. In commenting on a similar return a year ago, we remarked that while the increase from month to month was small comparatively, yet the fact that there was this increase every month gave good evidence that the growth of the country was upon a substantial basis. The reports have been better in the last year than ever before, but there has been no unexpected increase that might call for discount in the future.

ELSEWHERE in this issue will be found some interesting facts about the marvelous growth of the export trade of the United States. The figures for last year will surprise even some people at home who may not have watched the gradual and healthy progress made in the last decade.

NEW YORK'S NEW TUNNEL.

NEWSPAPER men representing some of the chief journals of the country one day last month walked under the Hudson River, which separates the City of New York from New Jersey. The distance is over a mile, and the completion of the tunnel through which they passed calls for some remarks on the engineering in the America of the present, as compared with the past. This tunnel is the first to be completed of the many planned for increasing the facilities for travel between New York City and its suburbs that are separated from it by water. From an engineering point of view the tunnel is not such a remarkable one, and it will dwarf into insignificance when some of the newer tunnels are constructed, but all the same, this tunnel marks an important step in the progress of the city and of the country.

Our readers may well hesitate to believe that this single bore under the Hudson River was begun thirty years ago. Various sets of capitalists worked upon it, and there were periods of years when little boring was done. It was only a year or two ago that the present owners started to finish the job. They pushed the completion with such skill that the tubes from each side of the river met near midstream with a variation of a small fraction of an inch. They propose to build a sister tunnel, and expect to have it done within a year. Electric cars will use the tunnels, and the quick connection afforded between the heart of New York City and suburban New Jersey will be of incalculable benefit to hundreds of thousands of people.

The lesson of interest from the point of view of progress is that when the tunnel was started thirty years ago it was expected to be a matter of perhaps eight or ten years' work to finish it. Now it is figured that with modern American appliances the duplicate tunnel will be done in just one year. The other proposed tunnels, across the same river, although larger than the ones just mentioned, are to be built in correspondingly quick time. Without going into technical details, it is difficult to give our readers an adequate idea of the wonderful progress that has been made very recently in this branch of engineering. Aside from the genius displayed by our American engineers, it must be confessed that the manifold uses of electric energy have had much to do with development of this phase of the transportation problem.

COLOR photography has greatly interested American photographers and chemists in recent years, and the subject is one of sustained effort on the part of many of them. Distinct strides have been made in making prints of almost every known color, but these prints are monochromatic. So far it has not been possible to blend the colors, and expert chemists declare that this can never be done until they can find some other sensitive salt than that of silver or platinum. That there is such a salt is generally believed, and that its discovery will revolutionize photography is equally conceded. The secret is worth a king's ransom, and of the many Americans who are striving to gain it there is likely to be some one who will obtain the precious knowledge quite as much by fatuous fortune as by more intelligent effort than that put forth by his fellow-seekers after the identity of the mystic salt. Real color photography will undoubtedly be one of the twentieth century's gifts to the world.

SOME of our contemporaries have said "things" about the United States Steel Corporation. Its annual report, just issued, shows that its net earnings in 1903 amounted to \$109,171,152, and the surplus is \$66,096,682. This was less than the previous year, but not so bad as some folks would have other people believe. The decrease was due to the adjustment of natural conditions, and not to any diminution in the business of the corporation. This big developer of the American iron and steel trade is colloquially known as a "trust." We recently pointed out the fact that instead of being what it is offensively called, a "trust," it had many thousands of owners, or shareholders. In that connection it is interesting to note that the exact number of persons now owning an interest in it is 79,957—very close to 80,000, enough persons to make a great many armies.

OUR MERCHANT MARINE.

READERS of THE AMERICAN EXPORTER are not greatly concerned in the nationality of the ships which carry our goods to them, but our exporters are more or less interested in the subject, and we frequently receive letters and circulars from Americans who decry the progress this country is making in upbuilding the merchant marine. The object is not so much to try to discredit American shipbuilding as it is to secure subsidies from Congress, a subject with which we have nothing to do, but as the effect of the work of these gentlemen has been to give a false view of American progressiveness to people far away, it seems proper to say that the United States is "doing very well, thank you," regardless of subsidies or lack of them. Readers of THE AMERICAN EXPORTER have probably gathered from its columns the information that would show the recent growth of the shipbuilding industry, the confidence of men of wealth in its future and the faith they manifest in the expansion of our foreign commerce, based upon the increased demand for our goods.

We do not take issue one way or the other with advocates or opponents of subsidy privileges to ships, but the American merchant marine shows up so much better in a recent report of the Department of Commerce that some mention of the fact seems to be quite proper. According to the report Great Britain, as was to be expected, maintains the lead in numbers and tonnage of both steam and sailing vessels, but the United States ranks second in tonnage of sailing ships and third in tonnage of steamers. The report says:

"How long Great Britain is to maintain her present position is to depend very largely upon the still further development of the foreign trade of the United States. If the average annual increase recorded in recent years is kept up, the United States is soon to do a very large part of the world's total exports and imports. When that time comes the United States will doubtless have much more than its present ratio. If it is to develop as it should it will have to have its own ships."

The American shipbuilding industry has within a recent period received an impetus that will prove of importance both to our foreign customers and to our exporters. This branch of our present activity has been slower in getting into action than most of the other divisions of commercial effort, but much more is involved, and it will soon be keeping pace with the others.

DO you want to buy any warships? America makes pretty good ones. The big Russian cruiser *Retvizan*, built in the United States by American mechanics, seemed to be endowed with some of the characteristics of her builders in life, energy and endurance. According to the cable reports, she was sunk or destroyed three separate and distinct times by the Japanese warships in attacks made at Port Arthur. The *Retvizan* refused to remain sunk or stay destroyed, but finally got stuck in the mud in the harbor, and was used as a floating fort. It is pretty hard to destroy American machinery, and anything we produce in the line of war machines or agricultural implements to till the soil in times of peace is equally certain to show good results. Both the Japanese and the Russians know this fact, and the war will give them further evidence of it, for both countries have been liberal purchasers of commodities that we are able to furnish and which they need.

SULLY, the great American cornerer of cotton, has met the fate which we predicted last month was only a question of time. He was forced to suspend business on March 18th, earlier perhaps than was anticipated, but none too soon to please the sufferers of his vicious tampering with the price of an important commodity which figures to a considerable degree in the world's commerce.

INCREASED exports of pig iron and steel have attracted the attention of some people who do not keep well informed. The few thousand tons sent to Europe do not signify much at present, but in view of the counter-movement that came very near getting into swing last summer, the small but cumulative increases are noteworthy.

GUN WILL SHOOT 25 MILES.

New American Weapon Built with Such Strength That It Cannot Explode.

WHILE John Hamilton Brown, the American inventor, is busy in the mechanical den at his residence in Reading, Pa., the sturdy iron and steel workers in the historic Scott Foundry, of that city, are busy perfecting his now famous segmental wire-wound gun, says the *New York Times*.

Inventor Brown asserts that a gun joined together like overlapped clapboards and wound with thousands of feet of the best steel wire makes the strongest and best ordnance in the world. Workmen are now completing a 6-inch wire gun 26 feet long, weight 20,000 pounds, and calculated to hurl a projectile thirty miles. The United States Government has made available about \$700,000 for twenty-five 5-inch guns and twenty-five 6-inch guns, and the War Board has directed that a 6-inch one be produced for testing. Naturally, Mr. Brown is an enthusiastic ordnance man, and has every confidence in his creation. He says that it is an impossibility to explode it with gunpowder, no matter what enormous pressure may be exerted upon it.

Mr. Brown described the attempts which have been made to overcome the various defects in guns. His own efforts consist of building the gun of many overlapping plates, which are afterward wrapped with wire. In this wire and the manner of wrapping it the great strength of the gun lies. By means of a special machine constructed by Mr. Brown for the purpose 2,500 pounds is constantly on the wire, while it is being wound in strands, increasing from seven at the muzzle to twenty-one at the breech. The tension on a square inch of wire is about 125,000 pounds, which makes so great a compression that it is contended that no possible powder pressure ever will put the tube under tension.

Over this wire is being shrunk a trunnion jacket of steel. The whole is braced together by a system of shoulders, so that it is impossible to pull the gun apart. The wire used in wiring has an elastic limit of 150,000 pounds and a tension strength of 225,000 pounds to the square inch, while the sheets of steel have an elastic limit of 80,000 and a breaking strength of 100,000. The tests of the forging show 60,000 and 100,000.

In the gun, the inventor thinks, the danger of explosion is practically eliminated, for there is said to be no unknown quantity. The principal material used in the gun, and from which it derives its great strength, is wire. Wire is the highest physical condition into which metal can be worked. The work of constructing is done under the personal supervision of Mr. Brown himself.

Col. John M. Ingalls, United States Army, retired, who is regarded as the greatest ballistic authority in the world, says that a 10-inch Brown wire gun, which will be of the same proportions as the 6-inch one, now nearly completed, will have a range of more than fifty-nine miles. In it sixty pounds of powder will be used.

A navy equipped with such guns, it is contended, could bombard any city that was not over forty miles inland without having any of the warships come within sight of the shore. One of these guns, they say, will penetrate more armor four miles from the muzzle than the best 10-inch gun now afloat or ashore will pierce at the muzzle.

About one-third of the weight of this gun is wire. Another third is of flat steel plates, which cost less than the wire. The other third is steel forgings, etc., at about the same price, which Mr. Brown claims produces the cheapest gun in America, about 21 cents a pound. The machine work is also low priced.

The gun now building will have a wire jacket wound on it with a tension of 15,000 pounds to the square inch. There are three inches of wire over the breech. This wire jacket then lapses down to one inch at the muzzle. There is a nickel-steel lining tube an inch thick running through the entire length of the gun. The shot will weigh 100 pounds. The chamber is nine inches in diameter. Mr. Brown expects to fire his gun at Sandy Hook, New York harbor, before long under a pressure of 60,000 pounds to the square inch. He will fire the gun with a 3,500-foot per second velocity, which is 500 to 700 feet faster than the best guns now in the service. At an elevation of 45 degrees a shot will carry for twenty-five miles.

New American System of Wireless Telegraphy.

APPLICATION has been made to the United States Government for patents on a system of wireless telegraphy invented by a young American, which is pronounced by persons who have examined it to be likely to bring wireless communication appreciably nearer to commercial practicability than anything that has been done so far in this field of research. The inventor, George S. Piggott, has been an ardent student of electrical science and chemistry for ten years, and for the past two years has been experimenting on what he claims is a much simpler system of wireless transmission than any now known. He has made innumerable tests over various distances, from a few feet to hundreds of miles, but it was not until his latest and most successful demonstration between Chicago and St. Louis was made recently that his secret partially leaked out, so carefully had he guarded his operations.

The complete success of this latest long-distance demonstration, the distance between the two cities being more than 300 miles, has confirmed Mr.

Piggott and his friends in the opinion that he has made a valuable discovery, one which he now has no doubt will prove of immense commercial as well as of scientific value. In the first place, he uses a code consisting entirely of dots, dispensing with the dash found in the Morse code, and substituting therefor double dots, thus reducing to almost nothing the possibility of errors in the process of transmission.

Another distinguishing feature of Mr. Piggott's system is that poles or high aerial conductors or radiators are not needed at either the sending or receiving station. For long distances the inventor says he has made use of a ground connection, but he has succeeded in transmitting messages over seventy-five miles without the ground connection, and it is his opinion that this feature may eventually be entirely dispensed with for all distances, however great.

The instruments used in his demonstrations are all of Mr. Piggott's own invention or arrangement, and so far are in the crudest state. He does not attempt to give a scientific description of them, but says that he has constructed them specifically for the purpose of intensifying the ethereal surging effect of the receiver; or in other words, to intensify the insurging or displacement, an effect which, he says, renders unnecessary the employment of aerial wires or poles, and of ground connections, which play such an important part in the paraphernalia of other systems. Mr. Piggott appears to have based his invention on the theory that ether, which pervades all space, is semi-metallic and solid, and that the displacement of one particle in any part of the universe causes the displacement of every other particle. Mr. Piggott's merit as an original discoverer must, therefore, lie in the establishment of his claim that he has succeeded in producing an electric spark which differs, both in quality and form, from all electric sparks, and which, in consequence, produces a displacement of ether, which is entirely characteristic of this particular spark. He has also brought into use in his demonstrations a system of electric films, the purpose of which is to render as near perfect as may be possible the sympathy which it is desirable to maintain between the receiving and the transmitting instruments.

When the test was made between St. Louis and Chicago the receiving instrument was situated in the inventor's home, in Chicago, and the sending instrument located at a residence in St. Louis. The signals "G. S. P.," ticked on the sending instruments at the St. Louis end by Mr. Piggott himself, were received at his home by his mother constantly during half an hour, she returning them. The signals were received promptly at the time agreed upon, and there was nothing of hesitancy or uncertainty noticeable in the impulse, which came plainly and strong.

Both the sending and receiving instruments used by Piggott in his demonstrations are placed upon glass jars or pillars, thus completely insulating them, and this is given by him as a further proof that transmission is possible without ground connections. The main secret of his machine, however, lies in the "electric films," according to Mr. Piggott. The difference in the density of these, he says, will enable him to make it possible to construct instruments that will be in perfect sympathy with certain other instruments. This will permit the use of such instruments without any fear that secrets may be stolen.

"About a year ago," says Mr. Piggott, "I made the discovery that what I have called 'electric particles' can be created and separated. As I am a chemist, I have used that science to discover the most essential points in my invention. I have studied other systems of wireless telegraphy and have always taken a great interest in high tension electrical action."

Pure Food Law Works Both Ways

PURE foods from abroad have been coming into the United States without any hindrance since the new law regulating the subject was put into force. Chief Chemist Wiley, of the Department of Agriculture, says that there has been less difficulty in enforcing the law than was expected. It has operated, moreover, to the possible advantage of consumers of American foods. Dr. Wiley says as to that:

"American exporters of food products are rapidly learning the advantages of having the stamp of approval of the Department of Agriculture on their goods put up for foreign consumption. On request we analyze and testify to the purity of all kinds of food intended for export. This certificate is of tremendous advantage to the American shipper. Here is a case we have just disposed of, which illustrates how religion and science are sometimes mixed. A New York house wanted to export to Turkey a substitute for lard. Moham-medans are not permitted to eat pork, so hog fat has little sale in that country. We analyzed the samples and found that they were free from hog fat, furnishing an official statement to this effect.

"Here's a bottle of fine-looking Chili sauce which proves my contention that tomatoes can be put up in attractive shape without the use of coal-tar dyes. There is not a particle of that chemical in this product, which is of an excellent color. Now here's a bottle of cherries that contains a large quantity of coal-tar dye. It is used to give the rich cherry color, you see. The people will learn eventually that coal-tar dyes are sometimes harmful and then they will no longer be used."

American Shoes in Syria.—United States Consul G. Bie Ravndal, Beirut, Syria, reports: "Lately American shoes have appeared in Beirut, and they have been so favorably received, particularly shoes for children—also rubber goods—that a Syrian has brought from the United States the necessary machinery (besides lasts, leather, etc.) for manufacturing boots and shoes on the American plan."

FIGHTING BLIZZARDS.

How Electric Railroads in America Keep the Cars Going During Snow Storms.

BLIZZARDS have been frequent in the winter just about ended, and the weather has not been so severe in the United States for a long stretch of years. Our readers in tropical countries can hardly appreciate what the effect of some of these great storms is upon traffic, both in New York and elsewhere in the country, but, like everything else in America, the railroads have a perfect system to meet Nature's attacks upon their serviceability. The *New York Times* recently printed a very readable article on the subject, which shows the scope of organized effort for emergency purposes that is in existence in New York City and in a corresponding way throughout the country. The *Times* says:

"When the average New York business man wakes to find the streets snow-covered and the flakes still falling, or watches a winter storm gather and break, the first question he is apt to ask himself is, 'Will the cars stop running?' This question, which gathers force with the duration of the storm, is all unjustified. He sees a massive sweeper roll by in a thick cloud of white, but the drifts, as they deepen, increase his doubt as to the ability of the street car company to continue operations. He pictures the work of keeping the tracks clear as being in the nature of emergency service, unorganized, created by the spur of necessity, liable to defeat.

"As a matter of fact, the first flake of snow which touches a New York pavement releases the initial link of an endless chain of preparation which defies a deeper snowfall than New York has known for fifteen years. On the instant the entire basis of operation is changed, and the 'snow schedule' is in force. The principle on which this schedule has been worked out is that a snowflake means a heavy snowfall. There is no loophole left open through which confusion may enter. The 250 miles of track are, so to speak, under martial law. The forces of the company for resisting the snow assume shape and take their stations with the discipline of a garrison when the call to arms is sounded. Nothing is taken for granted. The company is ready to engage the full stress of the elements.

"Within an hour every sweeper is manned and prepared for work. A small army of drivers reports at the barns in which the 'walkaways' are kept. A regiment of switch tenders reports for duty. A battalion of picked men whose duty it is to keep the hill tracks sanded is on hand, awaiting orders. The entire organization of employees, 12,000 men in all, with 1,000 horses and half a million dollars' worth of snow equipment, with the easy, resistless sweep of well-oiled machinery, responds to every call as it comes. These figures are not the result of guesswork. They were furnished the *Times*, as were the facts concerning the 'snow schedule,' by the management of the street car company.

"The main reliance of the company is, of course, its equipment of snow sweepers. There are ninety-two of these sweepers in all, each of which cost \$3,000. This number gives a sweeper for every two and a half miles of track in the Manhattan Borough section of New York City, and permits the clearing of every foot of tracks four times an hour, if necessary. Only once this winter have all the sweepers been out at one time, and then it was only necessary to keep them out for a few hours. The sweeper crews are composed of picked men. It requires special knowledge and special skill to run them. Motormen on a sweeper who receive in ordinary times 25 cents an hour are paid 40 cents an hour from the time they report for sweeper duty until they are no longer needed for the work and go back to their usual posts.

"If snow begins to fall at midnight, and every man on the sweeper detail—they are all old employees and have good runs—is at home or in bed, they are waked and on duty in an unbelievably short time. It would take several hours if one or two men were relied upon to go from house to house and summon each and every one of them. Instead two callers go to two of the men on the detail and rouse them. The four men continue the rounds, waking four others; the eight men keep the ball rolling. So the doubling up continues until the task is accomplished. The same principle is followed in all the departments.

"The sweepers are followed by the 'walkaways,' which are giant scrapers, built with wings which push the snow back for several feet on either side of the tracks. The sweepers only clear the tracks and for a space of a few inches on either side. It takes four horses to pull a 'walkaway' and two men to man one. There are 120 'walkaways' distributed, as are the sweepers, at the most advantageous points on the different lines.

"On the sweeper detail there are 388 men, or two shifts. For work on the 'walkaways' 480 men are allotted. The company owns 500 or 600 truck horses, and these are put on the 'walkaways' when the company goes on its snow footing.

"The lightest fall of snow, if accompanied by a temperature below freezing, plays havoc with the switches. A detail of 800 men, 400 on a shift, sees that they are kept clear. They are furnished with buckets of salt, but they use the supply only when a switch is irretrievably frozen up, for salt plays havoc with the electric apparatus, short-circuiting the motors and burning up the channel rails. In slippery weather the grades on steep hills offer difficult propositions. The rails must be kept constantly sanded to keep the car wheels from slipping, and eighty men are assigned to this task, some afoot and some with carts.

"In fighting a snowstorm the whole territory covered by the track is redi-

stricted for the work on hand. There are special details of electric workers, each under a regularly selected emergency chief. Each foreman has his snow foreman; each channel rail gang its regular snow leader. Even the repair department is on a war basis.

"Arrangements, made annually, provide for the comfort of the men who are on storm duty. Coffee is kept hot in the barns for the sweepers. There are provisions made for a twenty-minute instead of a five-minute swing at the end of each run, that the crews on the cars may thaw out. Each man is furnished with coffee tickets, entitling him to two cups. Everything possible is done to keep the workers fit."

New Mechanical Amusement Device.

AN American inventor has put forth something new in the mechanical amusement line. It consists of two towers rising alternately to a height of 125 feet on tubes that are forced upward by compressed air. The operating mechanism is under ground and the larger cages are pushed upward by means of the air working on the telescopic tubes. Each cage when raised to its highest altitude looks like a large barrel poised on a whisp of straw, and it was at first thought to be unstable, but tests have been made that show the device to be practicable and reasonably safe.

Ordinarily we do not go into details regarding the construction of mechanical devices, but in this case some brief statement may be interesting to our readers, for the contrivance is likely to prove to be a drawing-card in amusement resorts, especially parks and fairs, both here and elsewhere in the world. The telescopic tubes are made of one-half-inch steel, each section being 25 feet in length. The top tube is only 12 inches in diameter, but the cage mounted upon it is large enough to carry twenty-five people, and when the telescopic tower has been raised to its full height the cage can be made to revolve, so that occupants who remain seated may be able to view all of the scenery. Electric lights and other attractions go with the tower.

A single telescopic tower can be operated, but for economical purposes two towers produce better results in operation. If trips are made alternately the weight of the descending cage would force back air that would help to raise the ascending one, although some air-power would have to be used to accelerate the action of the mechanism. One man who has made the skyward trip said afterward: "I felt like a man might feel who was perched on a haystack mounted 'way up in the air on the point of a long needle." That is a sensation that some people would like to enjoy. If the promoters are able to interest capitalists in the device the telescopic tower will be as great an attraction as the famous Ferris wheel at the Chicago World's Fair in many more places than Ferris wheels could be built. It is worth noting that twin towers with all the mechanism involves an outlay of only \$20,000, as against four or five times that sum which the Ferris wheel cost.

The inventor intends to apply the principle of his device to commercial purposes and will try to adapt it to elevators in office buildings.

Foreign Markets for American Machinery.

A LONDON correspondent of the *American Machinist* contributes to current commercial information which is perhaps of more interest to American manufacturers than to our foreign readers, but which shows by suggestion how highly this British writer holds our products:

"Makers of American pumps, motors, windmills, etc., would do well to note the success which has attended the artificial irrigation of relatively small areas of land in New South Wales. There is an opening in that colony for pumping machinery, motors and other power generators, such as, for example, windmills and steam, oil and hot-air machinery. It may perhaps be advisable to sell such goods through agents who understand how to put machinery together. There are firms in Sydney who sell such lines as mentioned above for British and other makers, and they would no doubt deal in new ones if good and cheap. As regards heating apparatus, although the Australian winter is short, yet in some parts it is severe enough to render artificial heating necessary, especially in schools, churches and shops. At present the ordinary open fireplace is used, but it is very expensive in fuel, and is also ineffective. A manufacturer of heating apparatus would do well if he went about it in an energetic way. It would be necessary to send out an expert on hot air and hot water and open a warehouse, but in the end he would get the business. Your exporters of wire netting, iron rails and gates and barbed wire should note that there is every indication of a heavy demand arising in New South Wales for these manufactures."

Americans to Build Russian Bridges.—Plans and specifications for the construction of two new bridges across the River Neva, at St. Petersburg, have been accepted, according to a report received by the State Department from Ethelbert Watts, United States Consul-General, stationed in the Muscovite capital. Mr. Watts also writes: "There are two other bridges, one over the Fontaka and another over the Ekaterinhovka, in contemplation for construction. The contract for the latter, it is expected, will be given to American engineers."

American Phonographs.—"A remarkable thing is the number of American phonographs which have arrived in Bogota lately. Six months ago I did not see or hear one, but now on almost any evening you can pass in various parts of Bogota and see small crowds listening outside of some windows to the latest 'Yaqui' wonder to reach the top of the Andes."—A. G. Snyder, United States Consul-General at Bogota, Colombia.

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Cranes.

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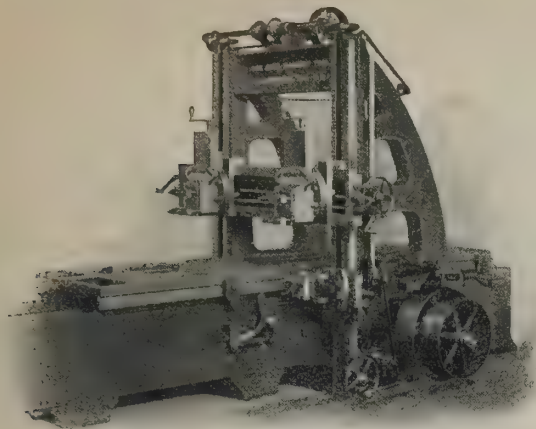
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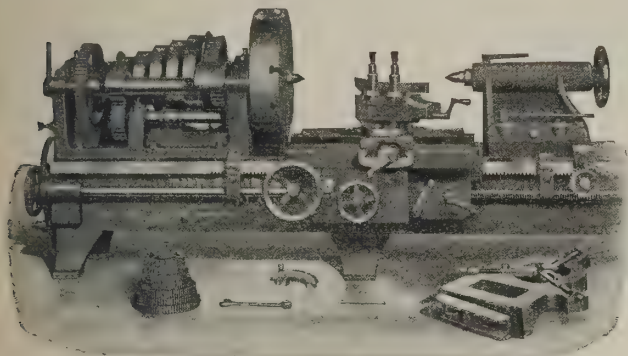
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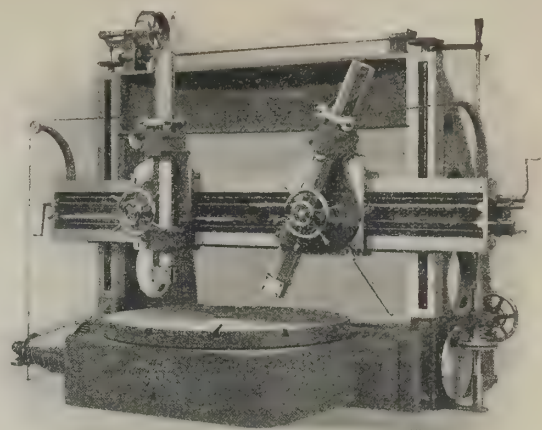
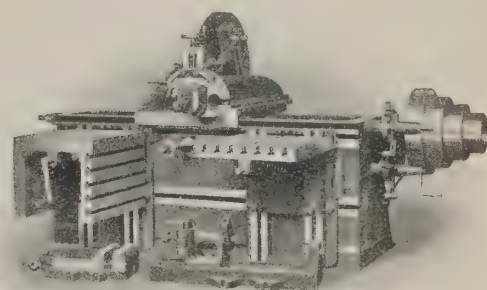
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Pond Planers are built in twenty-one sizes, taking
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20 H. P.	-	Weight, 9½ Tons
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for fuel.

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walks right along.Wheels (22 to 28 inch face)
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With indifferent fuel under
severest stress will blow off.Engines on "belt-brake"
show easily 40 to 60 per
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DEADLIEST OF MODERN RIFLES.

American Invention Which Prove to Be a Powerful Argument Against War.

ARBITRATION will be in greater demand than at present when a new rifle, invented by an American, becomes generally adopted. The gun has been tested by United States officials and pronounced feasible, and a former general of the army is president of the company which will manufacture the weapon. It beats all the machine guns so far put into service and could not fail to do terrible havoc if directed against an army. The inventor, a physician, named McClean, succeeded in interesting various military and other men in his machine gun some time ago. His first step was to produce a rifle that did not recoil. At that time McClean had only his rifle. He did not have the money to experiment with heavier guns, but his rifle was a success. He could whirl a wheel three feet in diameter at the rate of 1,500 feet a minute and shoot into the edge of it. The bullet holes would be exactly one foot apart, indicating that the gun was shooting 1,500 rounds a minute. Bankers and military men heard about it and went down to the little shop. It was not long before McClean was invited to Washington, and now the Government has given him an order.

The rifle looks much like any other weapon of that sort. The only difference is that it has a little instrument attached to the muzzle. This thing looks like a miniature water bottle, being about that shape. It is perforated at the sides, seemingly for artistic effect. But if there was ever anything which had stern utility about it that little instrument has. And every hole in the side is cut with the exactness of a part of a great telescope.

Dr. McClean is a man with soulful eyes, and is somewhat of a dreamer. He dreamed about this gun in Iowa and decided there was no reason why a gun should kick. The little instrument on the end of his rifle is the result of his dreams. He went on the theory that to throw a bullet or a ball or shell a mile or more there must be tremendous power back of that projectile. He believed that this power could be caught as it left the muzzle of the gun. He determined to try it, and he succeeded. That little machine on the end of the gun is the result. It is nothing more than a vest pocket gas engine.

This bottle-like instrument is attached to the end of the gun bottom outward. The bell-shaped portion of it is supposed to catch the gas as it comes out of the gun. But if all of it were caught the gun would go flying after the bullet. The holes bored in the sides are to let out that part of the escaping gas which is not needed. The part retained is turned back through a chamber running along under the barrel of the gun. This takes up the recoil, discharges the empty shells and reloads the piece.

Being nothing more than a simple little gas engine, it can work like chained lightning, and 1,500 rounds a minute is far from being out of the question. The rifle is so arranged that if one wants to keep shooting all he has to do is to get ready a supply of cartridges, so they will feed into the hopper, then push the little knob and pull the trigger. The gun will keep on shooting until the barrel melts or the supply of cartridges runs out. Dr. McClean has a cheerful and imaginative soul. He suggests what it would be like to arm 1,000 men with such guns and have them trained on the enemy a half mile or a mile distant. Then he wants to know what would be left of the enemy after a minute or two of that sort of firing.

After he had completed the rifle the doctor made a shotgun that would not kick, but that had nothing specially to do with his argument for arbitration, and the shotgun was shelved until he completed more important work. Now he has mastered the pompon, or 1-pound gun; has a 13-pounder practically under control and is trying to tame big navy mortars, which tear up the decks of the ships every time they are fired.

When Dr. McClean began on the pompon it was a fussy little thing that created more disturbance to the square inch than anything yet manufactured. The gun weighed about 1½ tons, and when fired would recoil 30 or 40 feet and was most likely to turn flat over on its back and tear up the ammunition wagon. Dr. McClean says he has it tamed now so that it is set on bicycle wheels and is fired like a rifle, kicking less than an old-fashioned shotgun. On hard cement it recoils about one inch to the shot. One may sit on a bicycle seat back of this gun and fire it for hours and never be jarred by it, according to the inventor's statement.

One aim was to control the piece so it would not be necessary to reaim it after firing. Not long ago the gun was being shot out into Lake Erie at the rate of 300 shots to the minute. Five holes, it is said, were made in a skiff 13 feet in length before it had time to sink. The shots were fired by an army officer, the skiff being two miles from shore. At another time five shots were put into the same hole in a tree a mile distant.

With characteristic cheerfulness Dr. McClean tells of the advantage of this piece. He says it is impossible with the small rifle to shoot a man with any surety of hitting him at more than a mile and a half. The doctor says that the 1-pound gun will shoot a man when he looks about ankle high on the horizon, or about three and a half miles. It is a sure shot at two miles or two miles and a half, and does not need to be reaimed when once fired.

The doctor's idea in constructing this piece of death-dealing machinery was to stop an army before it can get in range of the small rifles. Heretofore it has never been possible to do any skilful execution with a 1-pound gun. Combatants have had to take general results. Now they take aim and make every shot count. This is what Dr. McClean calls doubling the fighting zone. An army equipped with this gun can keep its opponents off at a good distance and

annihilate them. The doctor declares that he has a gun which can mow down armies. The United States and the governments of Europe are investigating to see just how much truth and how much boast there is about the weapon.

To Fix Limits of Cold Storage's Benefits.

DR. WILEY, the chief chemist of the United States Department of Agriculture, has begun an investigation that will be of world-wide interest. These are some of the questions for which he will seek answers through making practical experiments: Is the use of meats, fruit and other foods that have been preserved for a great length of time in cold storage injurious to health? Has the utilization of cold storage in keeping food products for indefinite periods been pushed too far? Regarding the scope of the inquiry Dr. Wiley says:

"We will investigate the effect of cold storage on foods of various kinds and also the effect of eating foods that have been kept in cold storage for long periods. We want to determine how the wholesomeness and nutrient properties of foods are affected by this treatment. Cold storage may be carried to an extreme, and as it seems to be a popular method of preserving foods of various kinds we wish to throw some light on the subject. It is something that has never been investigated.

"We know now that when meats are kept too long in cold storage they lose their flavor, and hence do not excite the digestive secretions in the proper way, and thus have a tendency to lose their nutrient and digestible properties. I know of certain choice cuts of beef and of birds that have been preserved in this way for years. After a certain point they deteriorate in quality. On the other hand, it is known that many foods improve in cold storage up to a particular point. Meats treated in this way become tender and develop a fine flavor, while fruits are affected in the same way. We do not propose to overlook the fact that cold storage works both ways, and that it increases the wholesomeness and palatability of some foods after a certain length of time, and that it robs them of these qualities after a certain limit has been reached. We propose to determine what that limit is.

"Cold storage has proved a great boon to the producer, the dealer and the consumer, and we do not want it understood that we are going to condemn the custom. We expect that the professional cold-storage men will cooperate with us in the inquiry. We will make chemical and nutrient analyses of various foods taken, from time to time, from cold storage, continuing the experiments until we determine the maximum improvement and the beginning of deterioration."

Special Trains Needed to Transport Our Flour.

THE great demand for flour, both for export and domestic use, has brought about an innovation in the transportation of foodstuffs. It has taken form in a special daily railroad train, called the "Flour Special," which runs between the great grain centers in the middle of the United States and the Atlantic seaboard ports. Though meat and cattle special trains have been in operation for several years the "Flour Special" is something new, although not unexpected when the growth of the country and its foreign trade are taken into consideration.

With the increasing magnitude of the milling business, the manufacturers found themselves called upon to solve the problem of insuring prompt deliveries to their customers. It was this condition that resulted in the special train service. Prior to this the millers had often sent out specials to fill "hurry" orders, but in recent months the demand for flour has been so steady and the "hurry" orders so numerous that the daily service was found to be a necessity. The plan has been so successful that it would be a difficult matter to find a miller willing to return to the old way of doing business.

The *Flour Trade News* in its last issue printed a picture of the train, which is composed of thirty-six cars loaded with 7,200 barrels of flour, valued at \$40,000. The freight paid on the shipment from Minneapolis to Buffalo was \$3,500, and as there is a train every day the weekly revenue to the railroad carrying the flour is about \$25,000. This special service obviates the necessity of the millers storing large quantities of flour in Atlantic coast warehouses to meet the demands of the trade.

Progress in Automobiles.—We have printed an account in a previous issue of the New York automobile show, but this paragraph in *Collier's Weekly* sums up the results so concisely that it is worth reading: "A million dollars' worth of motor vehicles was sold at New York's recent automobile show. The fourth annual automobile show, which was held at the Madison Square Garden, New York, was remarkable, not only on account of the diversity of the exhibits, but for the extraordinary number of knowing people who came to see them. The crowd that surged up and down the narrow aisles every afternoon and evening was made up to a great extent of the men and women who go to see and be seen at the Horse Show. In the case of this automobile show, they came not to be seen, but to see the legitimate exhibits only. Absolutely no effort was made to make the exhibition hall itself attractive and thus create a scene of beauty of which the automobiles form only a part. At the New York show every automobile had to stand on its own tires, as it were. Automobiles were there to be sold, and so great was the success of this dealers' exhibition that over one million dollars' worth of them were disposed of during the week."



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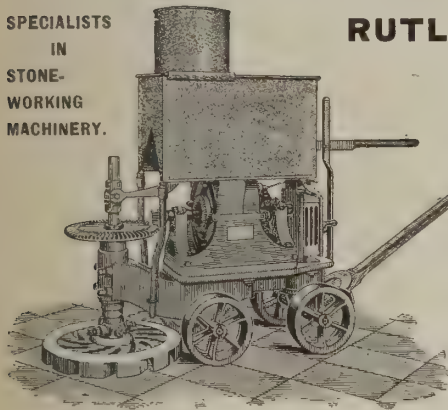
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"Yours very truly,
"SELMA (ALA.) WATER CO."

The water and oil that issue from the exhaust pipe disfigure, rot and rust the roof or walls of your plant. The Burt Exhaust Head allows nothing but absolutely dry steam to escape, thus it saves many dollars for repairs. The Burt Exhaust Head is the most reliable, the safest and most efficient head made.

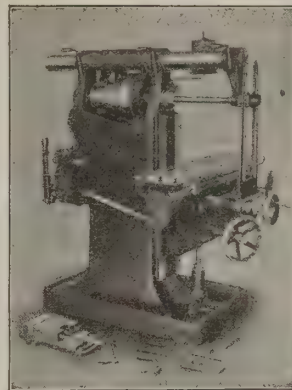
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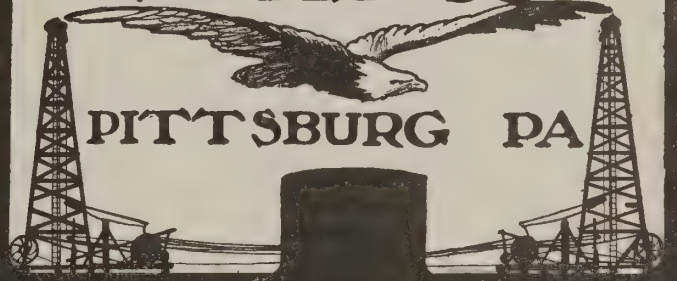
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CHANGES IN SAFE INDUSTRY.

Fireproof Receptacles That Are Really Fireproof and Other Recent Innovations.

AMERICAN manufacturers of safes came out with flying colors from the ordeal through which their products passed in the big Baltimore fire, demonstrating their superior merit in every way. The industry has always been an important one in America, but it has undergone many changes in recent years.

"The Baltimore fire has given as severe a test as could be desired of the safe and the safe-deposit vault that has been brought to perfection within the last ten years," said the manager of one of the largest safe manufacturing firms in New York a few days ago. "At the time of the Chicago fire there was nothing like them in existence. The modern safe is as much of an improvement over those in use then as the modern battleship is over those in use during the war of 1862.

"Fires in one part of the country and another are gradually taking the old-fashioned safe out of existence, and manufacturers are not putting others on the market to take their places. There is no denying the fact that cheap safes are made. Some of them look handsome in an office, but they are no more protection against fire than so much wood.

"Manufacturers used to aim to make a safe that was both burglar-proof and fireproof. They do not do that now. A fireproof safe—that is, a safe that will absolutely preserve its contents in a fire—is of very different construction from a burglar-proof safe. The perfect system of night watchmen in American office buildings and banks has reduced the demand for burglar-proof safes. Any burglar who touches a safe nowadays or gets anywhere near the door of a safe-deposit vault is likely to set off an electric alarm system that will bring the police or an armed guard upon him before he can get away. We have not had a bank burglary of any account in New York for twenty years.

"In constructing fireproof safes for offices in the skyscraper buildings we have to look out for danger from falls as well as destruction from fire. That is where the modern safe has stood the supreme test in the Baltimore fire. One of our safes, weighing 6,000 pounds, fell nine stories and is barely dented. Not long ago one of the modern safes fell twelve stories down the elevator shaft of a New York skyscraper. It cost \$1,200 to repair the elevator shaft and only \$26 to repair the safe. Some of the old-time safes were built of small iron plates—scrap iron, it might almost be called—riveted together at the corners. They might keep the fire out all right, but in a fall they went to pieces.

"The modern safe is a solid, one-piece angle frame, front and back, which cannot fall apart. It has eight flanges, compared with four in the old safes. The bolt-work and lock is away back of the fireproof filling, and not on the edges of the door, as formerly. The fireproof filling in the flanges or steps is of asbestos, marble dust and chemicals. Each manufacturer uses his own composition of chemicals, and keeps it a secret. The chemicals generate steam during a fire, which not only assists in preserving the contents of a safe, but reduces the chances of metal expansion.

"It follows, naturally, that safes are more expensive than they were. A business man does not hesitate now to spend from \$1,000 to \$5,000 on his safe. When you get far above the last-named price you get into vault work, which is a separate branch of the business. Safety vaults usually are built in conjunction with the construction of the building. The safes in them are designed by experts. They cost all the way from \$10,000 to \$300,000, which is the price of the vault in the First National Bank in Chicago.

"Steel is used in the construction of a safe whenever possible. For reasons not necessary to explain it is not always possible. Armor plate is not much good for safes. It is too expensive and does not work easily. We get the best results from a material manufactured for the purpose called chrome. Business men are buying more safes than they used to, because no man carrying a mercantile stock can get a fire insurance policy unless he keeps his books in a fireproof safe during the night, or in hours when they are not in use for business. Burglar-proof safes are still made for smaller towns or rural districts where the system of police supervision, night watchmen and burglar alarms is not so perfect as in New York."

Most Powerful Screwdriver in the World.

WHAT is undoubtedly the most powerful screwdriver in the world has come into existence through the necessity for something of the kind growing out of the needs of the engineering forces that are to build new tunnels to connect New York City with its vicinity. The carpenter in using the ordinary screwdrivers exerts a power of about 30 pounds. The new screwdriver will have a power of 200,000 pounds, equal to that exerted by 6,666 carpenters. They will drive the great piles which must be sunk under the tunnel; they will, in fact, be the piles themselves. Inasmuch as about 1,000,000,000 pounds of metal will be used in the tubes, a faint idea of what the piles will have over them can be formed.

The screwdriver piles to be used in the rivers washing New York's wharves are cylinders 2½ feet in diameter, made of cast iron 1½ inches thick. They will be located every 15 feet centrally, so that both tubes will be reinforced. They will be made in lengths short enough to be handled in the tunnel, the successive lengths being belted on as the pile sinks. The screwdriver, or screwpoint so called, is at the end of the pile and is so constructed

that it will have one turn to 21 inches and a diameter of 4½ feet. Ten years ago a person suggesting such a powerful screwdriver would have been considered a dreamer. Now it is accepted as a matter of course. All of which shows the progress of American inventive genius.

Advantages of American Vapor Engines.

GAS and hot air engines are coming more and more into vogue in America than they ever have before, although they have been popular since they came into trade. Some features of these useful and economical products of American inventive skill are given in a recent issue of the *Iron Age*, which tells how the gas engine is being installed in a great many small shops which formerly used steam as motive power, and this with very high-priced gas—\$1.25 per thousand feet. Whatever the particular reason may be, the gas engine is doing the work in the small shops that steam did and with entire satisfaction and marked economy. Its mechanism is simpler than that of the steam engine and is readily comprehended in its management by persons of ordinary intelligence. Says the *Iron Age*:

"The economy of gas engines varies greatly, being governed wholly by the price of gas. With natural gas at 10 cents per thousand feet, producer gas at 50 cents and illuminating gas at whatever companies choose to sell it for, gas engines are still much cheaper to run than steam engines, and there is no question but that they are making great inroads on the small engine and boiler business. It is said to be possible to get one horse-power from one pound of coal reduced to gas, but steam engines are doing well when they produce one horse-power from three times that amount of coal. The gas engine of the future, however, will materially reduce the consumption of coal, or gas, which is the same thing, for there are material losses in it, due to phenomena not yet fully understood."

Gas and hot air engines are not expected to displace steam engines by any means, but for many purposes they are much more satisfactory to the purchasers. We print the *Iron Age's* opinion upon the subject as a matter of information to which are readers are entitled. We do think that for some purposes the value of gas and hot air engines is not fully appreciated either at home or abroad. It is a fact that the demand for them has been increasing to an extent that is gratifying to the manufacturers, but the simplicity of operation of these motors, their comparative cheapness and their adaptability to so many conditions which are met with by small power users everywhere in the world seems to call for some mention of the merits of this branch of American production for the export trade.

New Phases of the Turbine Engine Discussion

STEAM turbines continue to be a leading topic for discussion in American trade newspapers. The *American Inventor*, which closely watches progress made in the inventive world, has this to say about the new motive agency: "Among the greatest advantages of the steam turbine engine is the saving of heat, which, of course, means coal; but it means also a cooler engine-room, and this, in turn, cooler cabins. A steam turbine can be almost perfectly insulated; there are but a few bearings, and they should be of the roller types. The thrust bearing, too, should be a roller bearing. It is an unsafe prediction for any one to say that certain machinery has reached its limit of efficiency, but we are probably pretty nearly correct in not expecting much further improvement in a crank engine. There is a limit to a piston speed, especially as we increase the weight of the moving parts, with many wearing surfaces, and high centers with cylinders well above the water line. These defects and many more are covered by the turbine.

"The fact that one of the large shipbuilding companies in the United States offered to equip a naval cruiser with turbines is suggestive. The few bearings that a turbine would have would be rollers, and the efficiency of a motor with but few wearing surfaces, and these of such an anti-friction kind as rollers, ought to be benefits of no mean order. The turbines would have no surface to adjust, no wear of any account, could be well balanced, and would work as economically, if not more so, in point of fuel, as a reciprocating engine."

Built Seven Locomotives in a Day.

WORKING on a rush order from the Japanese Government for locomotives, a big plant in Philadelphia, U. S. A., has established a new record by the construction of seven locomotives in a day. The engines were ordered by Japan for the military railroad to connect Fusan, on the southern coast of Korea, with Seoul, the capital. The line will be about 225 miles long.

The order, which called for twenty locomotives to be completed within thirty days, was received late in January. Six engines went overland to San Francisco, and thence by steamship for Fusan, while the remaining engines went by the all-water route from New York by way of the Suez Canal, all being shipped within the contract time.

American Typewriters in Greater Demand Abroad.—George Macmillan Cassatt, of London, was at the Netherland Hotel, in New York recently. Mr. Cassatt, who is resident director of the Remington Typewriter Company, in Europe, is a native of Ohio. "The demand for typewriters in Europe," said Mr. Cassatt, "is yet ten years behind the United States, and, though the market has been greatly expanded in the last ten years, it is still smaller than that of the United States."



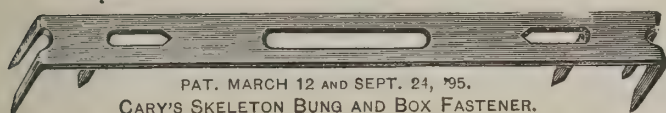
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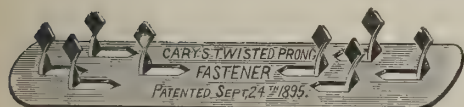
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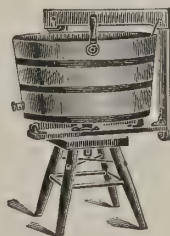
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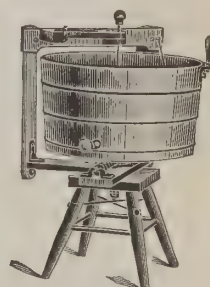
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"1900"
Ball-Bearing
Washing
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"Home" Washer.

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A REMARKABLE RECORD!!!

Commencing in the year 1900 to manufacture the "1900" Washing Machine, we at that time "turned out" an average of Five Washers per day. During the month of August, 1903, we manufactured and sold OVER FOUR HUNDRED Washers per day.

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REWARD OF MERIT!!!

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\$22.75 Upon receipt of Twenty-two Dollars and Seventy-five Cents in U. S. gold, or its equivalent, we will box, ready for steamer, and deliver F. O. B. cars at New York City, One of Each (Four in All), "1900," "1900 Junior," "Domestic" and "Home" "1900" BALL-BEARING WASHING MACHINES. Weight of the four machines, boxed 300 pounds.

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Tens of thousands of the "1900" Washing Machines have been sold in the United States, as well as in all parts of the world. Many of our agents at home are making over \$200 per month. Live men in your vicinity can do as well.

Orders received direct or through export houses; when ordering through the latter, to avoid errors, please mail us duplicate of order. Our Illustrated Catalogue mailed postpaid.

The "1900" WASHER COMPANY
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Sleeping Cars on Electric Trolley Roads.

WE have given accounts in previous issues of the development of the trolley-car service in suburban districts in the United States with reference to the replacement of steam locomotives and trains by electric cars, mentioning incidentally that sleeping-cars were a new idea in the competition that had arisen between steam and electric railroads. The New York *Tribune* prints a very interesting article on the subject, showing the development of the country and describing the innovation. The *Tribune's* article repeats some information given to our readers in previous issues, but there is an amplification of some of the subjects that makes it worth repeating. The *Tribune* says substantially what follows below:

For some time it has been possible to make trips by trolley between cities separated by hundreds of miles, and in the Middle West, in the United States, the trolley lines have entered into the business of transporting freight, produce and baggage, and now in the same region where the development of the trolley car has been greatest, the innovation of the trolley sleeper is about to be tried. This service will be put into operation at an early date between the cities of Indianapolis and Columbus. It is designed to have two of these cars moving between the cities named, one making the trip by day as a parlor car and returning at night as a sleeper.

In its exterior appearance the car is much the same as the standard American railroad coach of this character. Its operation on the road will be identical with that of the railroad sleeper, much the same arrangement having been made between the electric company and the palace car company which built these cars and which will own and control them. The latter company charges the electric company with mileage at an agreed rate and the electric company will collect its own regular fare and also an extra charge for the extra service rendered. The rate for a lower berth between Indianapolis and Columbus is to be \$2, and for the upper berth \$1 will be charged. This is about the same rate as is charged by the steam lines between the cities named for the same service, but the saving to the passenger in this case is the difference in the regular fare. Between these two points the round trip can be made on the trolley for the same cost as a passage one way on the railroad.

Except for the length of the car and the presence of a trolley pole on top, the outward appearance of the trolley sleeper is much the same as the ordinary sleeping-car. It is inside the car that the most radical departures from the old design of sleeping-car construction have been made, and yet in a great many respects the interior has much the same appearance as any American sleeping-car.

The most striking innovation is the fact that each section, when made up for the night, comprises a tiny room, so that a passenger may have in a measure the comforts and privacy of a room at a hotel or at home. When the occupants of a section have agreed that they are ready to retire the porter unlocks the backs of the two chairs of the section and stretches them out in such a manner that the two form one bed extending along the wall of the car. One of the chair handles is removed entirely and laid away until wanted again, and the other is dropped into a horizontal position, where it helps to support the bedding. After some further manipulations this forms the lower berth. Some wooden posts which have been brought from a locker at one end of the car serve as supports for a flexible wooden partition much like that of the roll-top desk. This roll is stored between the real and the false floor of the car and is finished with a covering of some fabric of attractive design. These curtains are operated on spring rollers, and the recess in which they repose when not in service is hidden by a metal plate, which is removed by the porter when he desires to draw them into place. Four of these curtains are required to enclose three sides of the room, the fourth side being the wall of the car. There is one curtain at each end and two on the side of the section toward the aisle. This is to permit of a door in the middle of the room, and this is shielded by a heavy drapery, which is hung after the section is made up.

The top berth is made up in the same manner as that in the usual railroad car, and, like the latter, also contains the bed clothing for the entire section. While it is true that there is not a great amount of space at the disposal of the occupants of this room, the arrangement has certainly many advantages over the simple curtain of the Pullman and Wagner cars. The room, though small, affords a privacy which will be appreciated by women and many men who are compelled to travel by night. This scheme also protects the ear of the sleeping passengers from a great deal of the outside noises which are experienced in or near the cars. The matter of ventilation is looked after in these little apartments by leaving a small opening at the bottom, and there is sufficient outlet at the top through the grillwork which supports the tops of the removable posts to permit a constant circulation through the section.

The car is a trifle over 48 feet long and a trifle less than 9 feet wide. It is supplied with vestibules and has a smoking-room, wash rooms and other conveniences. The main room is 32 feet long, and at night makes up into ten compartments, each one almost 7 feet in length. The interior is elegantly furnished in inlaid mahogany, and a generous supply of mirrors is worked into the decoration of the car in order to facilitate the matter of toilet-making.

In order to deaden the noise of the passage of the car over the rails the framework is lined with mineral wood. The trucks of these cars resemble, in their proportions, those designed for regular railroad work. Each truck has four wheels and each axle is fitted with a 150-horse-power motor, making a total of 600 horse-power for the entire car.

The Passing of the Steam Fire-Engine.

ONE of the signs of progress in America has been the constant improvement in fire-engines with which to fight fires, but as these machines reach a marvelous degree of efficiency a new era in the use of power to fight fires has begun. The recent completion of a powerful pumping plant and a system of independent high-pressure fire mains in the city of Philadelphia to take the place of horse or motor-driven steam fire-engines is also noteworthy in this connection as indicating the tendency toward centralization in modern mechanical engineering practice. While it may be too much to say that it marks the beginning of the disappearance of the fire-engine in large cities, nevertheless, it seems quite clear that such a plant can furnish more effective protection to a given area, and that, aside from its initial cost, it is less expensive to maintain. The advantage to the citizens is shown by the fact that for the district in the city of Philadelphia protected by the new plant insurance rates have been decreased 15 cents per \$100, and with the increased efficiency of the system a further decrease of 10 cents is promised.

In outline the new pumping system may be described briefly as follows: It consists of a number of powerful pumps driven by gas engines and located in a single building 72 by 140 feet, and using an independent and never-failing supply of water derived from the Delaware River. This is distributed under high pressure through a network of specially constructed mains, aggregating some nine miles in length, over the selected territory which includes about 425 acres. The hose is attached directly to hydrants of a special pattern, and it is possible to send four streams to the top of the highest skyscraper in Philadelphia. The plant is said to take the place of more than forty fire-engines, and the pressure furnished and consequent efficiency is far beyond that of ordinary fire-engines.

Latest Innovation in Farm Machinery.

INNOVATIONS of interest in the line of farming machinery are constantly appearing, and we are indebted to *Hardware* for some account of one of the latest ones: Not many years ago the farmer was compelled to plant all his seed by hand, walking many miles and carrying heavy burdens to sow the grains or plant the potatoes which were to yield the harvest in the fall, and even the grass had to be cut with scythes. Now all this labor is performed by machinery, while the farmer rides over the ground, guiding his team, and accomplishing more in a single day than he could in a week before the inventor set out to aid him in his toil. Still another machine has been brought forward, this time a weed-puller, invented by a man in Minnesota, U. S. A. In regard to the mechanism by which it is operated, two fluted rollers are mounted on an adjustable support at the rear of a sulky, with chain gearing to rotate them rapidly as the machine is drawn over the ground. As the flutings on the face of the rollers mesh closely together, it is easy to understand how any weed or grass which once gets between them will be drawn up, until it is finally lifted out of the ground, roots and all. To insure the killing of higher growths, the machine has been fitted with a series of rotary blades, which feed the tops of the weeds down beneath the face of the first roller, instead of allowing this roller to strike the stems and push the weeds over without uprooting them.

Progress of American Steel Manufacture.

DURING the last ten years much progress has been made in America in the use of stamped steel for the manufacture of various small articles, such as scales, coal-hods and various metal articles for household and industrial use. The chief advance has been in the improvement of stamping machinery, but the steelmakers have also accomplished a great deal by producing rolled steel that can stand as severe bending and stamping tests as the best brass. This has made possible a great deal of delicate and difficult stamping work that could not before be attempted. A few years ago cast iron was largely used for many small articles that are now made almost exclusively from pressed or stamped steel. New pressed steel hods are made that are far lighter and more durable than those formerly placed on the market and more serviceable. They are pressed out of a single piece of metal, which also enhances their durability. Of course, the machinery for stamping sheet steel is much more expensive than the equipment necessary to mold and finish castings, but the work is done so much more rapidly, and the parts when finished are so much stronger and lighter and more durable and accurate that there is a net gain not only in manufacturing cost, but a great gain in the character of the finished product. The saving in freight and expressage is also very considerable.

Labor Saving Machinery.—The *Wood Worker* prints the following: "A New York City daily recently printed an item from a correspondent to the effect that G. W. Younger, of California, U. S. A., has invented and put in operation a compressed air cross-cut sawing apparatus which, with a gang of seven operators, falls and cuts into log lengths as much timber as formerly required twenty-five men. The saws make 150 strokes per minute and a tree 5 feet in diameter is cut off in five minutes. The apparatus is said to be in use in the Mount Shasta country."

American Mowers for Russia.—In one week last month there were exported from America fifty carloads of mowers for the Russian markets, and this was only part of the order from that country.

THOMAS K. OBER & CO. (INC.)

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Outside Arc
Lamp.
Outfit, with
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ESSEX'S STANDARD STEAM-ENGINE LUBRICATORS.



Essex "Pilot"
Snap Lever, Sight Feed
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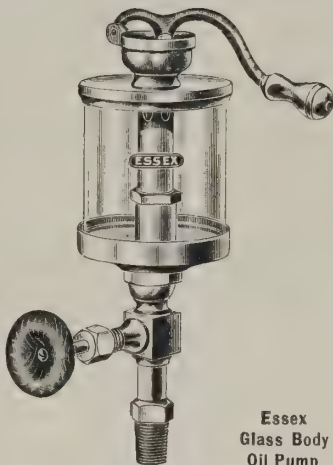
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We carry a large stock and make Quick Delivery.

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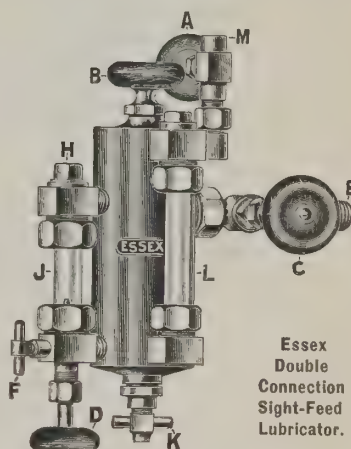
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LUBRICATORS, OIL
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Prices Quoted F. O. B. New York.

Specify ESSEX when ordering. Orders received through export houses. When ordering, to prevent delay and error, please mail us duplicate of order.



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Characters,
all easily interchangeable

INK PAD

allows types to print direct
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beautiful work.

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preserves alignment per-
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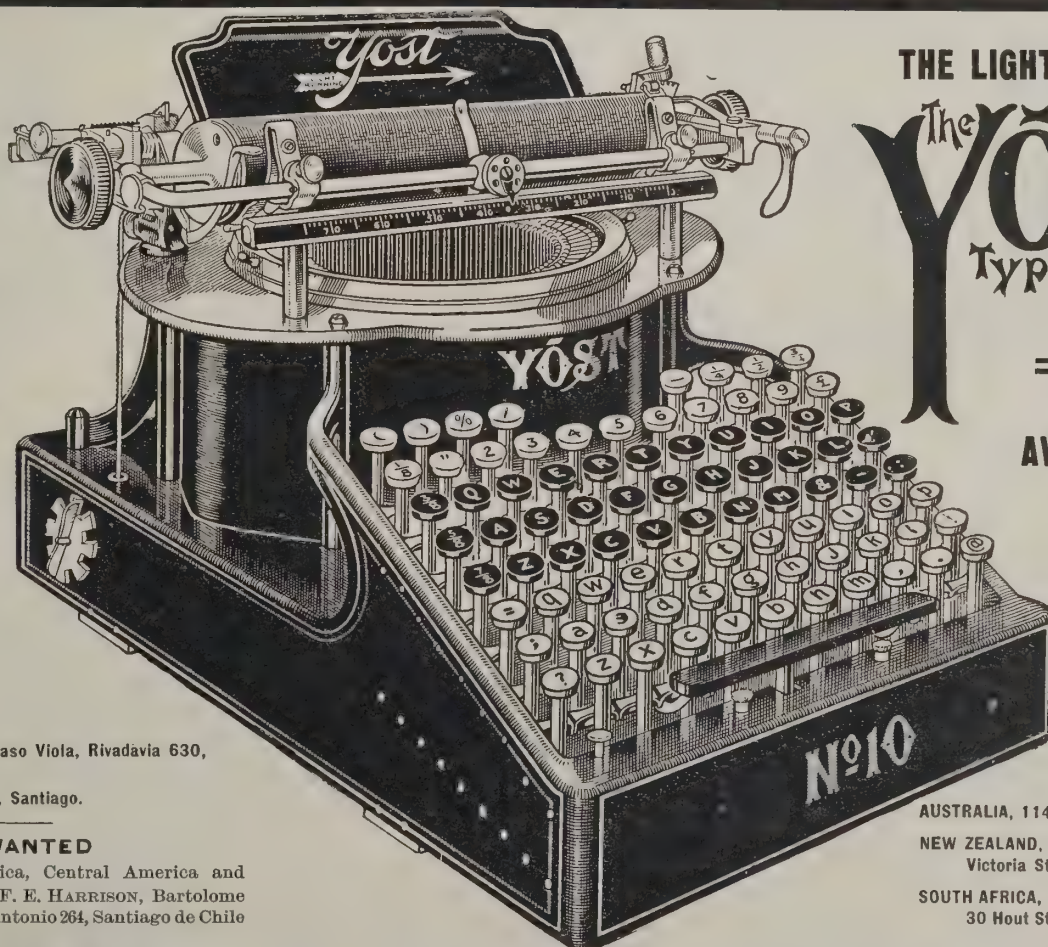
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ARGENTINE REPUBLIC, Francisco Paso Viola, Rivadavia 630,
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NEW TELEPHONE TESTS.

Conversation Between New York and London May Soon Be Possible by American Invention.

AMERICAN telephone companies, with headquarters in New York, are making tests, with a view to making improvements in the present telephone system, of the invention of Prof. Michael I. Pupin, of Columbia College, U. S. A. They have established lines in accordance with Professor Pupin's system, and already many satisfactory results have been determined. By placing coils wound on wire at regular intervals on a circuit, Professor Pupin found that the current was transmitted without interference of waves or loss of current. To apply this discovery practically the New York Telephone Company has installed an underground cable to Kingsbridge, the New York and New Jersey Company is experimenting with an underground line between New York City and Elizabeth, and two lines on Long Island, and the American Telephone and Telegraph Company is testing overhead Pupin lines to Omaha, St. Paul and Boston—much more distant points.

The first practical application was the laying of the cable to Kingsbridge, which the New York Telephone Company has just completed at an expense of \$200,000. Some of the wires are in use now, and have satisfactorily accomplished the results expected.

"The purpose of this Kingsbridge cable," said Chief Engineer J. J. Carty recently, "is to enable us to carry a long-distance wire, like the Chicago wire, into the city underground. By the old system conversation over a long-distance wire like that, if carried underground for that distance, fifteen miles, would be impossible. One mile underground has as much cutting down effect on a wire as 28 miles overhead, so ordinarily a 15-mile underground stretch at each end of a wire between here and Chicago would equal 840 miles overhead, or practically the whole distance between the two cities.

"In the new system the wire coils are placed at intervals of two miles on each circuit, and by the action of peculiar electrical laws, with the operation of which even engineers are unfamiliar, the current is transmitted without the usual interference. For this reason we hope to conform to the sentiment of the people of this city in regard to overhead wires by doing away with our present long-distance pole lines, which we will do if the experiment proves a commercial success. The final test is yet to be made, but so far the results have been very satisfactory."

The American Telephone and Telegraph Company has applied Professor Pupin's ideas to its long-distance overhead lines, and now has been experimenting with them for more than a year. The results have been generally satisfactory, but some minor difficulties, for example, the effect of lightning on the Pupin wires, have been encountered.

Professor Pupin expects that his new system will revolutionize the construction of telegraph cables and make possible telephone communication between this city and London. Heretofore what is known as the "resistance" of the cable has made telephoning across the ocean an impossibility. Even in ocean telegraphy, if the speed of transmission is accelerated beyond a certain point, the sounds are confused at the other end of the wire on account of this resistance. It was toward the overcoming of this resistance that Professor Pupin spent several years of study, research and experiment.

Will Use American Signaling System.

LONDON'S Underground Electric Railways Company, Limited, which concern, under the presidency of Charles T. Yerkes, is building extensive underground and surface electric traction lines in and around the British metropolis, has decided to use an American system of signaling on the fifteen miles of double track of the Metropolitan District Railway, and has given the contract for this work to the Westinghouse interests. The signals for this system, which will be the first electric road in Great Britain to employ such, will be operated by the electro-pneumatic method, and will be 300 in number, the service in the tunnels being arranged for trains running at intervals of about 1½ minutes. A new form of combined signal motor and arm will be employed.

American interests have secured practically all the contracts for the equipments, etc., of the Yerkes system. The power house at Chelsea, London, S. W., will have Westinghouse equipment. This plant will be the largest of its kind in the world and will cost upward of \$6,000,000. The motors in the cars for the complete system of some 140 miles will also be supplied by American interests, the British Thomson-Houston Company, Limited, which is controlled by the General Electric Company, of New York, having taken the contract, which calls for motors aggregating 500 horse-power for each of the 480 cars, and representing an expenditure of some \$7,000,000.

Our Electric Machinery for Australia.—The Westinghouse interests have secured a contract through their Australasian representatives for a 5,000-volt alternator of the rotating field type for direct connected exciter. The machinery is to be installed in the Dunedin (New Zealand) corporation electrical power plant.

American Fans for China.—An American concern has recently secured a large contract for the shipment of alternating current electric ceiling fans to China.

Pan-American Railway Lacks 4,800 Miles.

A LITTLE over a year ago we announced the departure of Charles M. Pepper, who then started on a trip as a United States commissioner in the interests of the proposed great Pan-American Railway Commission. Commissioner Pepper has just returned. He visited fourteen countries and spent a year in his work. He thinks that it will not be many years before a through railroad journey may be taken from New York to Panama and from Buenos Ayres to Lima. He says that 4,800 miles are lacking to complete a through railway line from New York to Buenos Ayres, and the labor cost of this construction he places at \$150,000,000. He says that action by Mexico on the north to extend its lines south to the border of Guatemala was taken about the same time that the Argentine Republic put in force measures prolonging its railway system to Bolivia. Only 172 miles of line are lacking to connect the Isthmus of Tehuantepec with Ayutla on the border of Guatemala, and a section of thirty miles has to be built in the latter country to make through connection with the capital. Actual work is in progress on the Mexican section. In the Argentine Republic the Government is building the line from Jujuy to Tupiza, in Bolivia, under a treaty with that country.

The Panama Canal is given as one of the favorable factors toward railway development. The moral influence of the control of the United States, Commissioner Pepper declares, will be very beneficial. Besides this the overflow of private capital will encourage railway enterprises both to meet the demand for supplies on the isthmus, and to provide for the international traffic during the period of construction work on the canal.

Commissioner Pepper discusses markets and trade and opportunities for American commerce, both as the result of railway extension and as a consequence of the permanent demand which may be created. He gives numerous instances of the preference for rolling stock from the United States, especially for locomotives. He says that the mills of this country can compete with Europe in supplying steel rails, and that bridges can be built for South America as profitably as for Egypt.

Wonderful Work of Our Veneering Machines.

VENEERING in America has largely increased in the last few years, and a writer in the *Woodworker* gives some interesting facts about the growth of the trade. Owing to the rapid consumption of the more valuable woods, such as black walnut, bird's-eye maple, curly birch, mahogany, etc., it has been found necessary to economize; and where, in years gone by, these woods were freely used in the solid, they are now generally veneered in thin sheets running from 10 to 12 to the inch to as thin as 140 to the inch. In cutting as thin as this it becomes necessary to use a knife that is keen as a razor, perfectly straight and uniformly tempered without any irregular spots—some too soft, causing the edge to dull quickly, and in dragging over the surface of the wood leaving a rough and uneven surface, or so hard that the edge will not stand the hard work required of it and crumble or chip out in cutting through knots and hard places. This is particularly true in cutting mahogany and other woods with long knives, on what are known as the slicer machines. As these woods, owing to their value, are cut thin, they cannot be cut with anything but a perfect knife, that will not mar or scratch the fine surface, and in this respect American mechanics have succeeded in producing the proper tools to do the work.

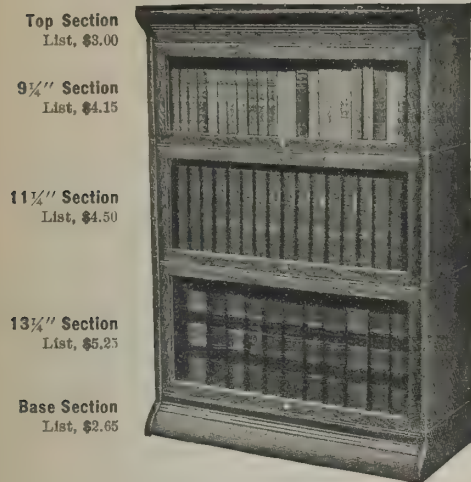
New Dangerless System of Electric Traction.

A NEW surface electric contact transportation system was tested at Atlantic City, U. S. A., recently on a mile track on the Pennsylvania Railroad, in the presence of a large number of electricians and railroad men. This system of car propulsion does away with the third rail, overhead wires, poles, open conduits, cables and storage batteries, and is called a wire-less system. It is declared that under it the cost of maintenance is one-fourth that of any other system. An especially large open trolley car was used for the experiment and more than one hundred persons were crowded in it. Beneath the car is a series of magnets, which make the contact as the car passes over the boxes, which are in the center of the track, 16 feet apart. In appearance the contacts are like inverted saucers. They are on the surface of the street, but do not in the least impede travel. The contacts are alive only at the time of the passage of the car over them. When the magnets pass over the contacts they fly upward, making the contact in a flash. It is claimed that a speed of eighty miles an hour can be attained with no loss of current.

American Motor Cars Becoming Popular Abroad.—Recent compilations of the United States Government show that in one month of the current fiscal year the exports of automobiles and parts thereof increased from \$55,473 in the previous year to \$107,521. Other figures, confirming those mentioned, make it plain that American automobiles are finding favor in foreign countries, and the wonderful strides American manufacturers are making in the development of the automobile industry tend to the belief that in the next year or two American automobiles will be found in every civilized country on the globe.

American Device Adopted.—The London *Morning Post* has adopted an American system for the electric operation and speed control of its printing presses.

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.



A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warehouses, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

9 1/4" Section
List, \$4.15

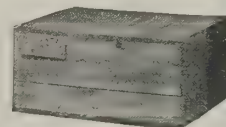
11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warehouses and on shipboard.

ALLIS-CHALMERS CO., CHICAGO, U.S.A.

LONDON, ENG., OFFICE:
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MANUFACTURERS OF

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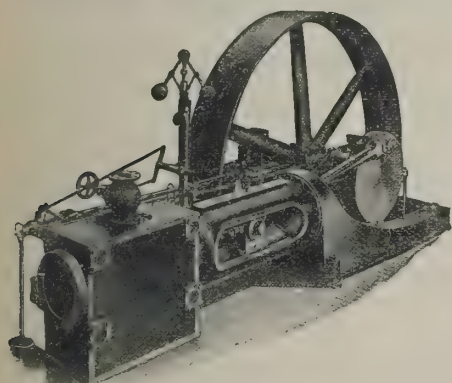
OF EVERY DESCRIPTION.

SOLE BUILDERS OF

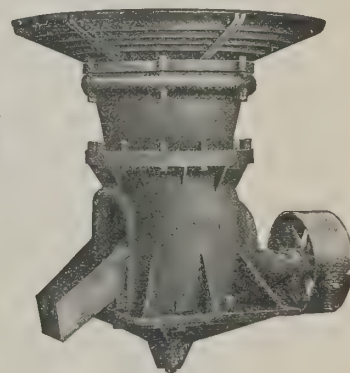
GATES ROCK AND ORE BREAKERS.

Pumping, Blowing and Hoisting Engines,
Air Compressors.

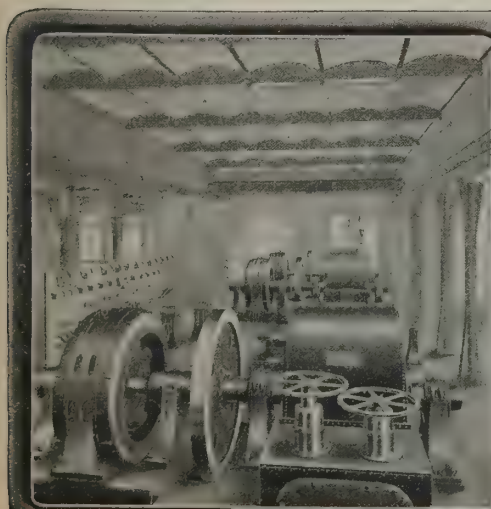
REYNOLDS CORLISS ENGINES FOR ALL POWER PURPOSES.



REYNOLDS CORLISS ENGINES
for All Power Purposes.



GATES ROCK AND ORE
BREAKER.



PELTON WATER WHEELS

PIKES PEAK POWER CO.

The illustration herein shown is that of Pikes Peak Power Co.'s Hydro-Electric Transmission Plant, located near Victor, Colorado. It consists of three 1,000-horsepower Pelton Wheels, operating under 1,180-foot head and direct-connected to electric generator.

This electric power is supplied to the many mines, mills and other industries in that vicinity. This plant has been running day and night for four years at practically no expense for repairs. Send for catalog illustrating many other plants of similar character.

PELTON WATER WHEEL CO.

150 Liberty Street, New York.

128 Main Street, San Francisco.

Future of Our Trade with China.

A BIG dinner was recently given in New York City, at which Sir Chentung Liang-Cheng, the Chinese Minister to the United States, talked about "The Gorgeous East." The diners cheered and cheered for the diplomat. He prophesied a great future for the trade between the United States and his country. He said in part:

"Ever since the discovery of the ocean routes to the East the efforts of the West have been directed toward shortening those routes. With this end in view, the Suez Canal was dug. The demands of commerce and civilization have long rendered an interoceanic canal across the American isthmus a positive necessity. The logic of events is such that the building of such a canal may now be looked upon as one of the undertakings sure to be carried out in the near future."

"One of the most obvious results of cutting a canal across the American isthmus is to bring the East and the West, especially America, into closer relations. The cities on the Gulf coast and the Atlantic seaboard will find themselves thousands of miles nearer than they are now to Shanghai and Yokohama. Trade and commerce cannot but feel the effect of this shortening of distance. Upon the opening of China as a market for American goods will depend, in a great measure, the future commercial expansion of the United States."

"It must be remembered that all the nations of Europe are active competitors of the United States in almost all those lines of goods which American manufacturers have to offer. At the same time the tariff walls which each country has erected for the protection of home industries are growing higher and higher every day. Trade, like everything else, follows the line of the least resistance, and the line of resistance for American trade lies evidently in the direction of China."

"It is not necessary for me to go into details regarding the Chinese market for American goods. Suffice it to say that the trade in wheat flour and cotton goods alone is susceptible of indefinite increase. The demand for American wheat flour in China first attracted attention shortly after the Boxer trouble. Now China imports several million dollars worth of it every year."

"The industrial development of certain parts of the United States is vitally affected by the progress of events in China. Thus, the 'open-door' policy so strenuously championed by Secretary Hay under the administration of President McKinley and President Roosevelt is dictated, not only by a benevolent desire to help China, but also by an enlightened self-interest."

Our Manufactures Are Liked in Chile.

CHILE'S trade with the United States is increasing. R. E. Mansfield, the American Consul at Valparaiso, in a recently published report says in part: "The value of the imports into Chile from the United States greatly exceeds Chilean exports to the United States. In the eight years from 1895 to 1902, inclusive, Chile imported from the United States merchandise to the value of \$34,287,648, while Chilean exports to the United States during the same period amounted to only \$22,820,832, a balance of trade in favor of the United States of \$11,466,816 in the eight years, or an annual balance of \$1,433,352."

"Machinery of various kinds, including agricultural implements, forms an important item in the import trade of Chile, a large part of which comes from the United States. The total value of farm machinery and agricultural implements imported into Chile in 1902 was \$635,845, of which the imports from the United States amounted to \$329,361. All the machinery imported during the year amounted to \$2,324,446, of which \$1,062,490 represented the imports from the United States."

Growth of Our Export Trade in a Nutshell.

CONSIDERING the commerce of the United States for 1903 by grand divisions, that with Europe is, of course, first in order of magnitude, both as to imports and exports. Our exports to Europe grew from \$680,000,000 in 1893 to \$1,087,000,000 in 1903. To the countries of North America our exports increased from \$125,000,000 in 1893 to \$227,000,000 in 1903. To South America our exports grew from \$34,000,000 in 1893 to \$46,000,000 in 1903. To Asia our exports grew from \$20,000,000 in 1893 to \$55,000,000 in 1903. To Africa our exports increased from \$5,000,000 in 1893 to \$31,000,000 in 1903.

In the commerce with Oceania the figures are, on their face, misleading, because they do not now include the figures with Hawaii as they did a decade ago. The figures on their face show exports to Oceania as \$11,000,000 in 1893 and \$37,000,000 in 1903; but if our shipments to Hawaii in 1903 were included in the statements of foreign commerce the total would be about \$50,000,000.

Our Exports to Canada.—Canada stands third in the order of magnitude of exports from the United States. Our total exports to Canada in 1893 were \$57,000,000, and in 1903, \$131,000,000.

America's Trade with France.—France is fourth in the magnitude of its commerce with the United States, our exports to that country in 1903 being \$88,000,000, against \$57,000,000 in 1893.

Netherlands Likes Our Goods.—Exports from the United States to the Netherlands in 1903 amounted to \$73,000,000, against \$43,000,000 in 1893.

British Empire Is Our Best Customer.

MORE than one-half of the exports from the United States in 1903 went to British territory, and practically one-third of the imports into the United States came from British territory. Our total exports to British territory in the calendar year 1903 were \$768,000,000, or 52 per cent. of our total exports, and our total imports from British territory \$308,000,000, or 31 per cent. of the total, speaking in round terms. These facts are shown by an analysis of the year's commerce made by the Department of Commerce. By British territory is meant the United Kingdom and its colonies, dependencies and protectorates.

The territory included under this designation of the United Kingdom and its colonies, dependencies and protectorates contains over 11,000,000 square miles, or more than one-fifth of the land surface of the globe, and has a population of 400,000,000, or one-fourth of the population of the world. The largest exportation to British territory, of course, was to the United Kingdom—\$43,000,000—and this was the largest exportation to any single country. Next in order of magnitude of exports to British territory was Canada, \$131,000,000; British Australasia, \$32,000,000; British Africa, \$28,000,000; British West Indies, \$10,000,000; Hong Kong, nearly \$10,000,000; India, nearly \$5,000,000, and the remainder scattered through the smaller British dependencies.

Big Demand for Our Products Abroad.

EXPORTS of American manufacturers in January and in the seven months ending with January show a larger total than ever before in the same portions of the year. For the month of January they amounted to \$38,213,352; while the highest January record on any former occasion was that of 1900, when they were \$35,586,940. For the seven months ending with January they amounted to \$250,214,936, and the highest record for that seven months' period in any preceding year was that ending with January, 1901, when the total was \$239,564,064. Thus the total for January is \$2,500,000 in excess of any preceding January, and for the seven months ending with January is about \$11,000,000 more than in any preceding seven months ending with January. These figures are shown by analysis of the January exports just prepared by the Department of Commerce.

This increase of \$20,000,000 in exports of manufactures in the seven months ending with January, as compared with the corresponding seven months of last year, is distributed among most of the leading classes of manufactures exported. Agricultural implements show an increase in exports, amounting to a little over \$2,000,000 for the seven months ending with January, 1904, as compared with the corresponding months of last year, and about \$4,000,000 increase, as compared with the seven months ending with January, 1902.

Growth of Our Trade with Japan.

KIYOSHI SUGAWA, one of the Japanese commissioners to the American World's Fair, and a director in the Japan Exhibit Association, was in New York last month. "The war," said Mr. Sugawa, "will not make the slightest difference in the Japanese exhibit. Prospective exhibitors took the probability of war into account and made their plans accordingly. There are more than 2,000 exhibitors among the Japanese merchants and manufacturers, and they haven't been able to get space enough."

"The Japan Exhibit Association," said Mr. Sugawa, "has had applications for space to display 240,000 articles, while the room that has been allotted us will only permit of 70,000 exhibits. It has been necessary to appoint commissioners to decide who is to have more space and who less, and when I left Tokio on January 7th the offices of the Exhibit Association were being besieged by grievance committees from the local branches of the association from all over Japan. Each district was afraid it would not get its due."

Mr. Sugawa expects that great numbers of Japanese merchants and manufacturers will visit the United States during the summer.

"This country is one of our best customers," he remarked, "and we on the other hand are buying more and more from the United States each year. It is only natural that the commercial classes of Japan should take the keenest interest in everything here. Reciprocity with the United States is a national sentiment in Japan."

Our Exports to Russia Gained Last Year.—Exports from the United States to Russia in the year just ended aggregated practically \$20,000,000. This is more than double the amount of our exports to Russia in 1901, the year in which duties were advanced upon merchandise from the United States entering Russia, and is double the average for many years preceding that date. Imports from Russia have also greatly increased since that time. Comparing conditions in 1903 with these of 1901, it may be said that exports to Russia, as already indicated, show an increase of more than 100 per cent. Of agricultural implements the amounts were: 1901, \$1,692,597; 1903, \$3,636,145, showing even a greater increase than the general average.

Exports of Wire, Wire Nails and Pipe.—The demand abroad for our wire, wire nails and pipe continues, nearly 7,000 tons having been exported through New York and other Eastern seaboard points last month by the American Steel and Wire Company and National Tube Company, branches of the United States Steel Corporation.

MILLS NOVELTY CO.

INCORPORATED.

CAPITAL, \$500,000.00.

CHICAGO, U. S. A.



The Mills-Chicago.
With Music Box.
Weight, boxed for
shipment abroad,
about 340 lbs.



Mills Novelty Co.'s Works, Chicago, U. S. A.

Largest Manufacturers and Exporters
in the world of all kinds of

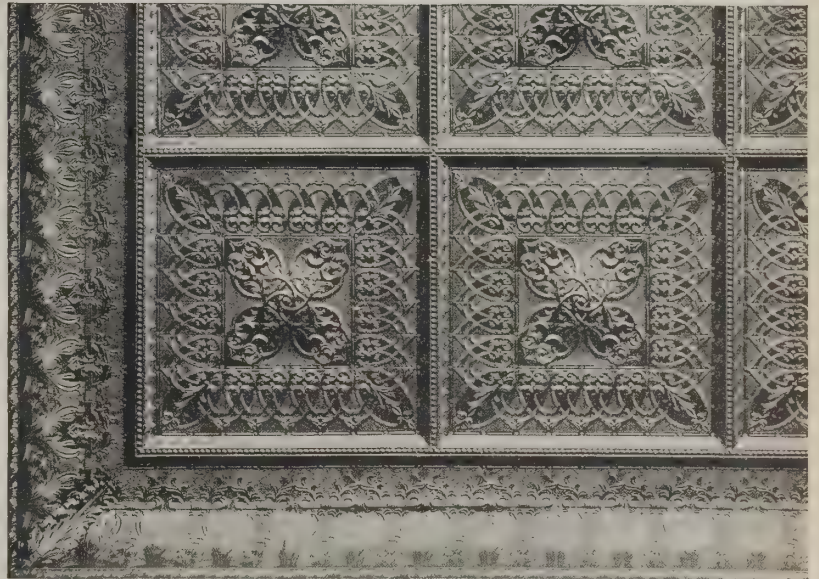
Coin-Operating Machines.

Our 80-page catalogue, just issued, profusely illustrated, in colors, describing the many styles of **Coin-Operating Machines** made by us, will be mailed post-paid to all parts of the world.

Nearly all our Coin-Operating Machines can be made to be operated by the coin of any realm.

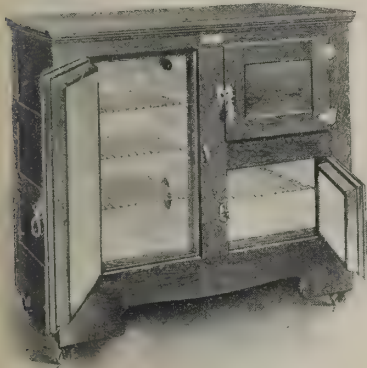
All machines are boxed ready for steamer, and prices quoted will be f. o. b. cars New York or San Francisco. Orders received through export houses. When ordering through export houses specify MILLS NOVELTY CO.'s COIN-OPERATING MACHINES, and to avoid errors, please mail us duplicate of order.

EMBOSSED METAL CEILINGES, Side Walls and Center Pieces. LARGE AND COMPLETE LINE OF CLASSIFIED DESIGNS.



New Catalogue sent on request to those interested.
SPECIAL PRICES FOR EXPORT.
J. H. ELLER & CO.
CHICAGO, ILL. U. S. A.

MONROE PORCELAIN REFRIGERATORS.



Monroe Refrigerator No. 21. Style D.

THE MONROE IS A HIGH-GRADE REFRIGERATOR, BUILT FOR THE HOUSEHOLD.

Each food compartment is moulded in one solid piece of porcelain. The corners are rounded. There are no joints or crevices for the food to decay in. The porcelain is white, durable, and as easily cleaned as a china dish. The ideal house refrigerator, absolutely sanitary. The prices here quoted for foreign markets only (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

MONROE No. 21, Style D, Solid Porcelain Inside, Oak Exterior, \$54.00

Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.

MONROE No. 30, Style E, Solid Porcelain Inside, Oak Exterior, \$69.00

Crated, measures 49 x 27 x 57 inches. Gross weight, 820 lbs.

All sizes carried in stock ready for immediate shipment. Special sizes built to order.

Our latest catalogue, illustrating and describing the various styles of Solid Porcelain Refrigerators made by us, mailed postpaid.

Orders received direct or through export commission houses. When ordering through the latter, to prevent errors, kindly mail us a duplicate of order.

Specify "MONROE."



Monroe Refrigerator No. 30. Style E.

MONROE REFRIGERATOR CO.,

Patentee and
Manufacturer,

LOCKLAND, OHIO, U. S. A.



LITTLE'S SATIN-FINISH CARBON.

LITTLE'S CARBONS will not dry out under any ordinary circumstances, in any climate. No Carbon made under any other process than Little's can give this guaranty, and there can be no imitation of Little's process in carbon making; attempts to steal it have resulted in permanent injunction; and contempt of Court is an untried way to business success.

Little's famous brands, "Cobweb" and "Satin Finish," are known and used all over the world.

Little's Carbon Papers are better than all others because: They do not smut. Impressions from them in many instances can hardly be told from those made by a ribbon. They are not sticky or greasy, yet they do not dry out and do not spoil with age, or in any climate. They last longer than any others. The color is denser, stronger, more permanent than any other. It is evenly spread by automatic machinery.

Most other Carbon Papers look alike. Little's looks different. It is different, being made differently by a special process, and it does different work. Send for Catalogue. Orders received through New York exporting houses at export rates.

A. P. LITTLE,

Manufacturer
Standard Typewriter Supplies,

Rochester, N. Y., U. S. A.

Russia Orders American Submarine Boats.

WAR between Japan and Russia has interfered to some extent with certain branches of the export trade, but there have been increases in other directions. Russia, for instance, has just given a rush order for ten submarine boats to an American company. The contract specifies that the vessels must be delivered by the builders at whatever port the Russian Minister of Marine designates. If the vessels are delivered within eight months the builders get a bonus of \$750,000—\$75,000 on each boat. The greatest reticence is observed by the company in regard to this order, for the submarines would be liable to seizure by Japan and the difficulties of delivering them, particularly on the Asiatic coast, would be very great, for Japan would undoubtedly do everything possible to capture or destroy the boats even before they could reach the war zone. The vessels will be built in sections, to be put together at some point selected by Russia, but ships carrying the material would be subject to seizure by Japanese warships.

The agent who made the contract is quoted as saying that Russia had no expectation that there would be a war, or the contract would have been made over a year ago. The fact that the submarines are ordered on a quick-delivery basis of eight months indicates that Russia does not expect an early ending of the war.

If these boats are completed in time to take part in the naval struggle it will be the first test of their efficiency in actual warfare. Thus far submarines have been subjected merely to trial trips and certain maneuvers imposed by the Navy Department of this country and the French and British Admiralty. Their utility is largely a matter of conjecture. This much is known of them: They can dive and remain under water for from one to four hours. While under water the best searchlight in the navies of the world could not discover their presence. They also run in what is known as the "awash" position, which means that the waves are continually running over their all but submerged body. At night it would be practically impossible to pick them out. Their speed while under water is from three to four knots an hour, and while running in the exposed position they can make from eight to ten knots an hour. Each boat is equipped with two torpedo tubes and projectiles of the Whitehead variety, one of which is capable of destroying the largest battleship if delivered with precision.

It is probable that Admiral Dewey's views had something to do with Russia's selection of the submarine boat as an offset to Japan's equipment with the ordinary type of torpedo boats and torpedo-boat destroyers. Admiral Dewey, a few days ago, was quoted as having stated that if Japan had been supplied with submarine boats on the night of February 8th, when she made her attack on the Russian fleet, not a Russian ship in the harbor of Port Arthur could have escaped destruction. This at least shows that Admiral Dewey has faith in the submarine type, in spite of the fact that it never has received a test in actual war.

Ordinarily it requires ten months to build a submarine boat. By crowding the work it can be done in eight months, and by making extraordinary efforts it can be accomplished in six months. This means work both by night and by day. The castings and forgings for the body of the craft can be easily turned out, but when it comes to installing the machinery and adjusting it a delay results. In the balancing of the weights depends the efficiency of the submarine. Even one more man in the crew than had been provided for would throw the little terror out of plumb, and if the extra burden is toward the bow the boat may not rise to the top with the promptness expected. The machinery is placed with as much nicety as regards detail as the works of the finest watch. A mistake, however slight, may mean death to the imprisoned men, and, what is even worse in war, complete elimination of a factor that might mean the defeat of the enemy.

But the company feels perfectly safe on the time limit. It will make a fair profit on the vessels, and the bonus is worth striving for, as it will add \$750,000 to its exchequer. Constructor Spears, who formerly was an officer in the United States Navy, has made all arrangements for crowding the work. He has finished designing the vessels, which will be of the same type as the *Adder* and *Moccasin*, of the United States Navy. The boats will be capable of carrying a crew of from six to eight men. Their armament will consist of two Whitehead torpedo tubes, and for defense they will rely on the small target they present and their ability to sink below the surface of the water. They will be equipped with gasoline engines and driven by screw propellers.

The only means of entrance or exit is by the queer little scuttle-like conning tower, and only one man can go in and out at a time. Observations are made by utilizing this conning tower and they can be conducted while the vessel is in the awash position, and the rest of the body practically under water.

No interference by the United States authorities is expected. No nation which is neutral would, of course, sell a warship to a combatant, but that doesn't prevent a private concern from furnishing, at its own risk, supplies or implements of war to either belligerent. Only two nations—the United States and England—own submarine boats of the type ordered by Russia.

Our Trade with Spain.—United States Vice-Consul Byrne, at Valencia, reports as follows: "There is a marked increase in Spain's importations of United States products. As a direct result of the recent successful labor movement, with its consequent advance of agricultural laborers' wages, several American-built harvesters were imported this season by large farmers and operated with complete success on the extensive wheat plains of La Mancha, the cost of harvesting being reduced by one-half."

Death and Danger in Submarine Boats.

ON page 24 of the March issue of THE AMERICAN EXPORTER we printed a graphic account of the development of submarine boats with reference to the safety of the crew and their chances of escape in case of disaster, the problem being how the last man would be able to expel himself from the boat. Coming so soon afterward, on March 18th, the sinking of the crack British submarine boat "A1," which was run down by a steamship off the east coast of the Isle of Wight, losing her entire crew of eleven men, is of more than ordinary interest. The disaster has provoked much discussion in America, and the following editorial on the subject in the *New York Tribune* will be found both timely and interesting:

"The first fatal accident resulting from the use of a new implement of warfare has gone on record. The event occurred in time of peace and during experiment maneuvers, so that the loss of life in consequence is parallel to that which might be caused by the bursting of a gun on a battleship during target practice. A British submarine torpedo boat, while submerged only a few feet and lying in wait for a theoretical enemy, was hit by a passing merchant vessel and so disabled that her officers and crew, eleven in number, were unable promptly to escape. Though the precise truth may never be known, it seems probable that death resulted from the fumes of gasoline, spilled by the shock of the collision. This would certainly be a quicker consummation than dying from a slow exhaustion of the air supply.

"Whether the failure of the submarine to get out of the liner's path was due to the imperfection of her periscope, which may not have given a view of the whole horizon, or to lack of vigilance on the part of the officer in charge, is another doubtful point. However, if he had his wits about him immediately after the boat was hit, and nothing else interfered to prevent, he should have been able to bring the boat to the surface in a few minutes. By starting the electric motor which drove the pumps, he could quickly expel enough water—one would think—to impart the necessary buoyancy to the craft. Inasmuch as there had been trouble before with this part of the boat's equipment, perhaps it would not have acted promptly in the emergency. Again, even had the pumps worked satisfactorily, it is to be feared that the submarine would not have been right side up or in anything like a horizontal position on getting to the surface. The hatch through which the men could emerge would hardly be opened until this part of the boat was out of water. It seems probable that her trim was so badly spoiled by the blow she received that escape would have been difficult, if not impossible. Still another possible effect of the impact, especially if directed nearly at right angles, would be to sink the submarine almost instantly. The shells of such craft are exceedingly thin. If a big hole were stove in, water would pour and carry the damaged vessel quickly to the bottom. Drowning, not suffocation, would then cause death.

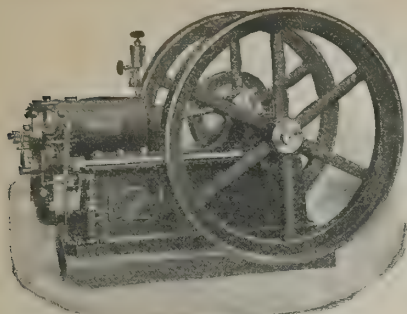
"From the momentary panic which this unhappy event will create among officers and men in the navies of the world there will soon be a reaction. It must be remembered that scores, if not hundreds, of trial trips have already been made by submarines without any serious mishap while they were submerged. Looked at merely from the statistical point of view, therefore, the chances of a repetition of this unfortunate episode are exceedingly small. They will be rendered still smaller by the precautions which the accident will suggest. Great Britain, like some other powers, maintains secrecy about the details of her latest model. It is conceivable, of course, that further improvements in design are possible. Perhaps better instruments for making observations when a boat is submerged may be needed. Maybe a compressed air chamber and trap-door in the bottom will be regarded essential. It is hard to avoid the suspicion, though, that the chief cause of the accident off Portsmouth was a defect of management rather than one of the submarine system. The latter will certainly not be abandoned because of anything that has yet happened."

Colombians Like American Footwear.

ALBAN G. SNYDER, the American Consul-General at Bogota, Colombia, sends to the Department of Commerce the following, which will be of interest to merchants in other countries: "As stated in a former report, the American styles of boots and shoes have gained a firm foothold in this market, and now some fifteen stores handle them, where a year ago they say you could hardly find them in Bogota. They seem to be growing in favor. The article they will have to compete with most is the high-class French shoe. One of the high-class shoemakers here, a Frenchman, who receives as high as \$12 per pair for his shoes, recently showed me several American lasts, bought in the United States, telling me that the demand made it necessary to get the American shapes."

Agricultural Implements in Australia.—United States Consul Orlando H. Baker, at Sydney, N. S. W., Australia, has sent an interesting report to the American Department of Commerce regarding agricultural conditions and the demand for machinery in that part of the world. He says in part: "It may be well to say that there is manifested a desire on the part of agriculturists of Australia to obtain the very best machinery in every industry, and that there may be seen at the district agricultural fair exhibits of machinery in motion which would compare with anything to be seen at State fairs in the United States. These fairs are held annually in all the larger towns and are always well attended." This explains why our agricultural implement trade with Australia is growing.

Steam—ENGINES—Gasoline.



We make a specialty of **Steam Engines** and **Gas and Gasoline Engines** and **Pumpers** from a 1 H. P. Combined Engine and Boiler for \$100 and a 2½ H. P. Gasoline Engine for \$125 up to any size in either **Vertical, Horizontal, Marine, Hoisting, Pumping, Locomotive and Portable Engines on Wheels.**

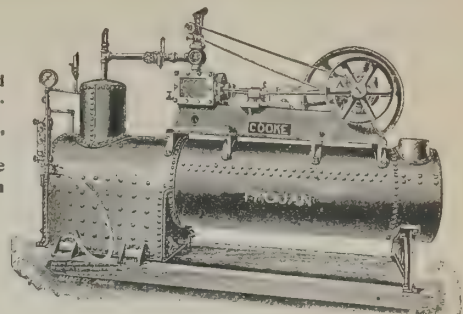
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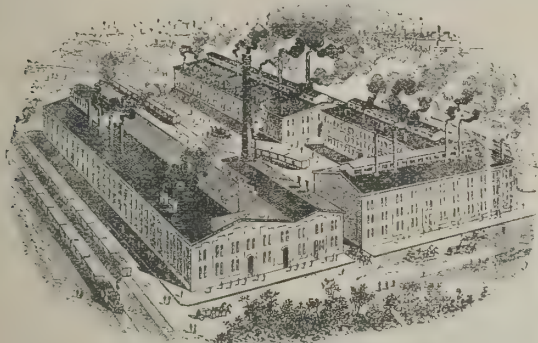
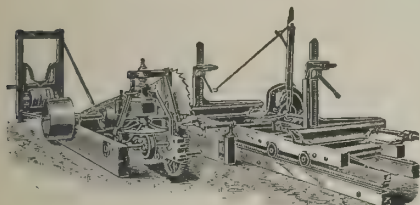
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And the official records show that in the Model Dairy at the Pan-American ITS WORK EXCELLED EVERYTHING, averaging .0138 for 50 consecutive runs and WON WORLD'S RECORD for practical every-day work.

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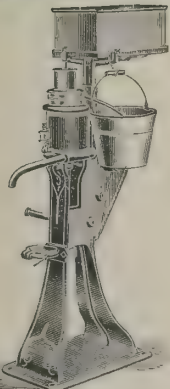
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Miniature United States Navy for the World's Fair.

NO feature of the Government of the United States will be more satisfactorily represented at the Louisiana Purchase Exposition than the United States Navy, and in these days of reports of engagements between war vessels in the Far East people are more than usually interested in knowing what warships are like. An elaborate exhibit, which is a perfect reflection of the service, is now being installed on a floor space 200 feet long and 77 feet wide in the Government Building.

The exhibit will give an intelligent idea of the internal and external features of American men-of-war, weapons and their use, of the great graving and floating docks in which fighting vessels are placed for repairs, as well as a representation of the actual life and duties of the officers and enlisted men of the navy and Marine Corps afloat and ashore, in war and in peace, together with the Government's facilities for educating officers and its methods of enlisting and training men and boys who compose the fighting personnel of the United States Navy.

Another interesting feature of the exhibit will be a working model of a graving or dry dock built to scale, illustrating the type and size of docks at various navy yards. The model of the dock and basin occupies a space 30 by 9 feet. In connection with the dock is a tank filled with water, representing a basin or harbor, in which a model of the United States battleship Illinois will be floated each day and the process of docking a ship will be shown in detail.

There will also be exhibited a working model of a steel floating dry dock, illustrating the type recently installed at the New Orleans naval station. The model will be afloat in a tank of water, which will also contain a model of a battleship built to the same scale. All operations incident to the docking of a vessel in a floating dry dock will be performed.

The United States Naval Academy at Annapolis, where future officers of the navy pursue their studies, is reproduced in miniature.

A pleasing, instructive and spectacular exhibit of the navy afloat and ashore will be a series of about sixty biograph motion scenes of the life and duties of officers and crews of men-of-war, both in war and in peace, as well as stirring lifelike scenes of maneuvers of vessels, torpedo attacks, manipulation and firing of great guns, landing parties, boat races, fire quarters, naval recruiting office where recruits are given physical and mental examinations to test their fitness for the requirements of the naval service, recreations afloat and general muster.

German Ship to Be Named "America."

ONE of the pleasing evidences of the friendly relations between Germany and the United States is the announcement recently made by the management of the Hamburg-American Line that the new giant steamship being built by that company will be named the America. Later on there will be a sister ship to this great ocean flyer and she will be called the Europe. The America will be the largest ship in the world flying the German flag, and will be launched shortly. She is a little larger than either the Celtic or the Cedric, of the White Star Line, which are now the largest vessels in commission.

The America and Europe will each have a displacement of more than 30,000 tons, and either will be able to carry more than 3,000 passengers, besides sufficient freight to load up forty trains of twenty cars each. Neither boat is to be a record-breaker, but will be a trifle faster than the Celtic. The ships are intended as great money-makers rather than fast travelers, following the precedent set for the Pacific ocean trade by the American builders of the big twin steamships Minnesota and Dakota.

To drive the America two sets of quadruple-expansion engines, turning twin screws, will be employed, the steam being furnished by eight double-ended steel boilers. The ship will have nine decks, four pole masts and two funnels, the latter rising to a height of 133 feet above her keelson, each smoke-stack being over twelve feet in diameter. The America and her mate will be 1,000 tons larger than the Kaiser Wilhelm II, which, with the Deutschland, is the fastest merchant vessel in the world. The America will be longer than the Great Eastern was, but will have less beam and draught, which will give her less displacement. Each ship will have two promenade decks, and will go even the new Baltic one better in the way of electrical and navigating appliances.

International Benefits Derived from New Ships.—The construction of the enormous steamships that are now being built is a benefit to the people of ordinary means in all countries who cannot afford to pay high rates and yet who do not wish to travel uncomfortably. The aim of the steamship companies at present is not to build fast steamships for the few people who can pay the highest rates, but to build large, safe, comfortable steamships that can carry the greatest number of passengers at a moderate rate of speed. The effect is to promote travel between the various countries of the world, with resultant increase in trade due to the observation of the travelers.

Saving Something After Big Fires.—The recent big fire in the city of Baltimore called fresh attention to an American invention for getting the greatest amount of salvage out of fire losses. The water-soaked material is placed in what is called a kiln; there are fans and other appliances, all of which diffuse the heat in an economical and effective manner. After the Baltimore fire there was a great demand for this apparatus, and it gave great satisfaction.

Our Plows and Reapers in Turkey.

UNITED STATES CONSUL THOMAS N. NORTON, at Harput, Turkey, contributes an interesting report regarding the progress of our foreign commerce in his consular district, from which the following extracts are interesting: "There is a steady increase in direct importations from the United States since the establishment of this consulate at the close of 1900. The introduction of American plows, harrows, drills and a reaper has attracted much attention. Some difficulty was encountered at first in training horses to draw the various implements. The results obtained from the deep plowing of the American plows have afforded most striking object lessons. All have been impressed by the difference in the yield of grain and cotton, when comparison is made with adjacent fields that had been cultivated with crude plows, duplicates of those used in the time of Abraham.

"The introduction of the reaper in 1902 was attended with many riotous manifestations of hostility from those who felt more directly the economic results of the advent of a machine displacing manual labor on so extensive a scale. During the harvest season of 1903 there was fortunately no repetition of the opposition. The reaper was kept constantly busy at various points in the fertile plains of Harput. General satisfaction has been expressed by the provincial authorities at the entrance of these modern appliances, and there is every prospect of a good market for our agricultural machinery being opened up in the immediate future.

"An agency has been established for American pumps and six have been introduced here. These all do good work and are highly regarded. At present they are run by hand power. A horse-power has been introduced, and I have strong hopes that this device may aid materially to solve the irrigation problem of the great Harput plain, where water is found abundantly at no great distance from the surface and where animal as well as human power is exceedingly cheap."

Bright Outlook for Our 1904 Export Trade.

EXPORTS of American industrial, manufacturing and food products promise to reach a degree of expansion during 1904 exceeding all previous records unless all indications are discounted. The New York *Commercial* has interviewed the heads of the large freight steamship lines, the leading corporations developing foreign markets and the established export houses of the city. The pith of the views may be summed up in the statement that large producing corporations, the manufacturers of machinery, tools, mining equipment and electrical contrivances, who have been devoting exclusive attention to the domestic consumers have started out upon exporting careers, the lead being taken by the United States Steel Corporation in making efforts to secure foreign markets.

Russia is forging forward as a buyer of American agricultural machinery. Following the recent award of the contract for 1,000 Westinghouse air-brakes to be used on the Russian railway, comes the news from electrical companies, including the Westinghouse and the General Electric, that Russia will prove a profitable market for American electrical traction supplies during the coming year, judging from negotiations now in progress with Russian authorities. Other marked features of the export trade, presaging a brilliant future, is the export of \$7,000,000 worth, approximately, of American boots and shoes, a growing demand abroad for American machinery and tools, the large exports of railway equipments and a growing trade with South and Central Americas.

American Light and Warmth for China.

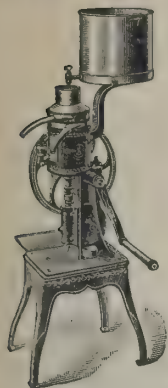
IN many parts of the world the people sat at darkness until the exportation of American petroleum began. There are remote towns in the interior of China where the name of America is hardly known, but where tin boxes containing petroleum that are brought from the treaty ports are hailed with delight as vehicles of light and warmth, the true gospel of life. For over ten years the export trade of the United States has been increasing steadily and rapidly. The years 1901 and 1902 were unusually prosperous ones in the annals of the industry. The exports of petroleum and its products in 1902 amounted to 1,064,233,601 gallons.

This large amount was less, however, by 14,840,918 gallons than the number of gallons exported in 1901. On comparing the separate exports for the years 1901 and 1902 it appears that there was a considerable falling off in the naphtha and illuminating products in 1902, and an increase in the amount of crude, lubricating and residuum products.

America's Opportunity in Asia Minor.—Edward J. Sullivan, United States Consul at Erzerum, Turkey, writes of the opportunities existing in that region for American manufacturers, in part as follows: "I am in constant receipt of requests, personal and otherwise, from Trebizond merchants asking that the manufacturers of the United States seriously consider the opportunity that presents itself for trade and commerce in Asia Minor."

American Machinery in Colombia.—The last available yearly report of the commerce of Colombia shows that American agricultural and other machinery is duly appreciated by the people of that country. On a basis of pounds Colombia's chief imports were: From the United States, 133,321; from England, 59,281; from Germany, 10,025.

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Immediate and absolutely complete separation of cream from milk by machinery.

500,000 Machines in Use throughout the Dairy World.

A saving of 10 to 25 per cent. in any climate, and 25 to 100 per cent. in warm countries.

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Machines Simple, Durable and Easily Operated.

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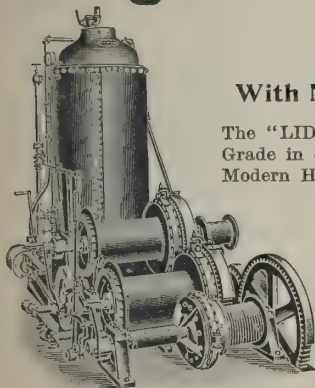
With New Improved Patent Friction Drum.

The "LIDGERWOOD" Hoisting Engines are Strictly High Grade in every particular and accepted as the STANDARD Modern High-Speed Hoisting Engines.

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We make the kind the United States Government buys and which is being adopted by Foreign Governments as well as by those interested in the economical baking of the products of flour, meat and vegetables.

Either Coal, Wood, Natural or Artificial Gas can be utilized as Fuel. Used by Bakers, Hotels, Steamships, Restaurants, Confectioners, Colleges, Asylums, Private Residences and in Japanning, Enameling and Core Baking.

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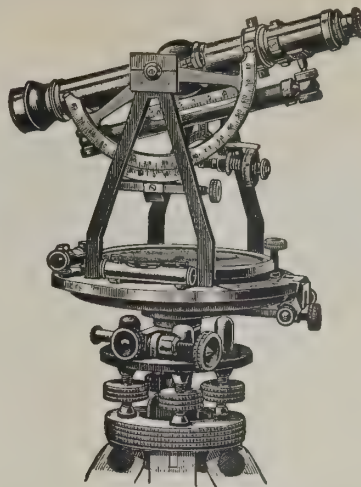
PORTABLE OVEN No. 114—Has three shelves (28x20 inches each shelf) holding at one baking Thirty Large Loaves of Bread. Weight, boxed, 300 pounds. Price, \$37.50

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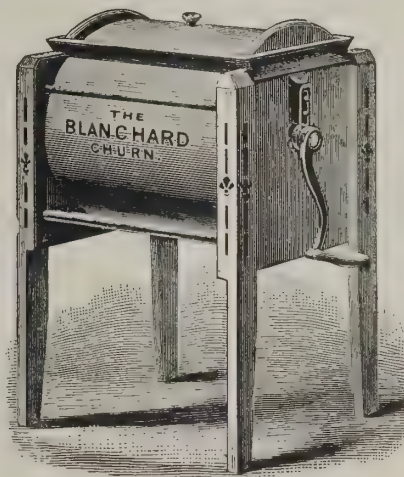
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Print Butter Molds, Carriers,
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Our goods are the highest grade in efficiency and economy, giving universal delight and satisfaction to the Dairymen.

The Blanchard Churn is made in five sizes, with capacity of 2 to 16 gal. of cream each. Packed 2 in a crate for export.

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Type of Motor for
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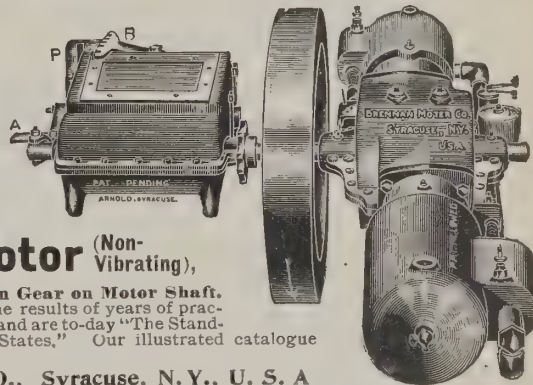
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The Handy Fruit and Vegetable Slicer

The most interesting kitchen utensil ever invented. It slices every kind of fruit or vegetable into an infinite variety of unique and fancy designs, making an entirely new, novel and delicious product.

Is invaluable for making delicate salads, garnishings, etc. Makes Juliennes ten times as fast as by the ordinary method and is the only utensil that will produce Lattice Potatoes. Is extremely simple to operate and sells rapidly wherever shown.

\$16.50 Upon receipt of SIXTEEN and 50-100 DOLLARS
100 in U. S. Gold or its equivalent, we will deliver boxed, ready for steamer, F. O. B. cars New York, one gross [144]
No. 6 X SLICERS, for Export only. Weight boxed, 120 lbs.

NOTE.—To facilitate our rapidly increasing export trade we desire to arrange with one responsible business house in each trade center of the world, to handle our NO. 6 X SLICERS and other specialties manufactured by us.

HANDY THINGS CO.,

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Uncle Sam's New Measuring Bureau.

MEASURERS who figure in millionths of an inch or millionths of a degree of temperature are to be found in the new Bureau of Standards established by the United States Government. Some marvelous achievements are attributed to the bureau, such as measuring a candle-light six miles away or the splitting of a human hair into a thousand widths, either of which is of no practical value. In other directions, however, the bureau is of benefit to commercial progress.

Information concerning standards and the methods employed to secure them will be furnished for the benefit of the United States Government, any State or municipality within the United States, scenic societies, educational institutions, firms, corporations and individuals engaged in manufacturing or other pursuits. Prof. William Hallock, of Columbia University, who is identified with the work of the Bureau of Standards, explained the importance of the new institution.

"Many people are at a loss to understand," he said, "how the researches and tests of this bureau can be of any practical value to the average citizen. What does he care, anyhow, about standards and decimal subdivisions? Just this much: If he buys a thermometer or an incandescent lamp or a set of scales or a lens or a machine—steam, gas, electric, pneumatic or hydraulic—or any one of the thousand contrivances in common use, he wants to know whether it is what it should be and whether it conforms with standards recognized in other parts of the world.

"To manufacturers whose products are brought into competition with those of other countries this knowledge is of the greatest importance. If American manufacturers, in offering their goods for sale in Europe, should represent them to be of a certain degree of fineness, or as fine as similar European products, and expert comparisons should show that the facts in the case had been misstated, it is easy to see what would happen.

"It has been necessary in the past for manufacturers in this country to pay individual experts fancy rates to test the quality and powers of their output, to make such tests themselves at much trouble and expense or to ship their goods to France or Germany for inspection or measurement by foreign physicists. Now all this may be done right here, and instead of costing from \$25 to several hundred dollars, the needed information may be had almost for the asking—a fee of only \$2 or \$3 being charged by the bureau to prevent its being deluged with nonsensical requests.

"Suppose you are buying or are manufacturing for sale some incandescent lamps which should be, for example, 16 candle-power on a 110-volt circuit. You can send one of these lamps to the bureau and receive in return an official certificate stating whether it is or is not up to the standard. The laws define the unit of electrical strength and resistance, and also the resistance of a given column of mercury. The strength of an electrical current is determined by ascertaining the amount of silver which a specific current will deposit in a given length of time, as in silver plating. All we have to do is to weigh the silver deposited and we have the standard of current immediately.

"From time to time I have asked the bureau to test for this laboratory different pieces of electrical apparatus, such as cells, dynamos, ratio coils, resistance boxes and transformers. Other laboratories, as well as manufacturers, have submitted electric motors, steam engines, gas engines, microscopes, telescopes, photographic lenses, etc. The weights used recently by the Assay Commission were all standardized by the Bureau of Standards.

"If an American merchant is about to purchase some copper for electrical purposes that has shown to him a quantity of that metal and is told that it is of a certain conductivity, all he need do is to send it to Washington and find out if it has been correctly represented. The same thing is true as to the purity of gold and silver and all other metals. In the course of time the bureau doubtless will be able to test radium, thorium, actinium, polonium and other radio-active substances with the same degree of skill that has characterized its other experiments. In fact, in this field alone the bureau promises to be of immense value to our citizens, since it is commonly believed that radium and like properties soon will be found in abundance in the United States.

"It frequently happens that an indirect advantage to commerce and science results from the bureau's investigations. New methods of manufacturing devices or of improving those in existence are suggested. Afterward they are adopted and become popular. Many of the instruments of great value to-day are the outgrowth of hints received during these tests."

Automatic Device to Kindle Fires.

AN automatic fire kindler, the operation of which is regulated by an ordinary alarm clock, will doubtless appeal to every person whose duties include getting up early to start the fire in the kitchen stove. The *Saturday Evening Post*, of Philadelphia, U. S. A., gives the following information on the subject: "With this new contrivance installed in a house it is necessary, upon retiring, simply to assemble the fuel in the stove or any fireplace, connect an attachment to the clock and set the latter at any required hour. When the alarm sounds a fulminate is ignited, which, communicating with an inflammable substance in the stove, range, furnace or grate, immediately starts the fire. By the time the householder or servant is up the fire is burning briskly and the water is boiling.

"It is claimed that these new devices may be so set that they will start fires whenever wanted and thus have a home thoroughly heated before the occupants

stir from their beds. From the back of the clock used in connection with the automatic fire kindler extends a shaft on which is mounted a rotary friction disk or pulley, the periphery of which is milled or otherwise designed to create friction when rotated in contact with a relatively stationary member. By the operation of a pivotal arm, a lug and spring and other attachments in connection with the rotary disk, this entire external mechanism is set in motion when the alarm is released.

Instantly a fuse, with an easily ignited fulminate at its end and held in place in a slot opening against the friction, is set afire. The flame, properly confined within the metallic slot, travels instantly over the fulminate strand, which is saturated with a free-burning ingredient. The clock may be set on a nearby shelf or on the back of the stove or a furnace projection. As even a small and cheap alarm clock may be utilized, and as the tube incased fire strand may be safely controlled, that part of the problem is very simple. Moreover, any kind of kindling substance ordinarily used may be utilized. The fuse may be employed merely to ignite paper under the regulation kindling wood fire, with coal or cord wood on top. In such cases the action is similar to that of a match, or, rather, several matches lighted simultaneously and burning longer than ordinary matches."

Interesting Facts About Ocean Cables.

ONE of the most convincing evidences of the spread and growth of international trade is shown in the development of electric intercommunication between various parts of the globe. The ocean telegraph cables of the world now in operation have ownership in twenty-two different countries and comprehend a total length of 252,436 miles. Denmark has a more prominent place among countries whose capitalists have engaged in laying ocean cable lines than might be expected from her inferior commercial importance. She ranks fourth on the list, even surpassing Germany. The reason is that the Great Northern Telegraph Company, with its offices at Copenhagen, laid and operates one of the most important cable systems in the Orient—that which connects Vladivostok with Nagasaki, Shanghai and Hong Kong.

There are in operation now only 38,797 miles of ocean cable, or about 15 per cent., owned by governments, the remainder being in the hands of private owners.

The British cables which connect London with all parts of the world have a length of 154,099 miles, of which 14,963 miles are owned by the Government. Of the 139,136 miles owned by private companies the longest mileage is in the Australian and Oriental lines. The Eastern Extension, Australasia and China Telegraph Company controls 27,609 miles and the Western Telegraph Company 19,880 miles.

The most important of the British cable lines are the five that stretch across the North Atlantic, and also the first line stretched across the Pacific, which connects Vancouver with the Fiji Islands, Norfolk Island, Queensland and New Zealand, and which was opened on December 8, 1903. Among the many British lines also are cables to South America and along both of its coasts.

The United States controls 44,470 miles of cable, nearly all in private hands, the Government controlling only a short mileage in Alaskan waters. The most important are the five lines across the Atlantic and the second great Pacific cable, completed on July 25, 1903, by the Commercial Pacific Cable Company, between San Francisco, Honolulu, Midway Island, Guam and the Philippines. Another great line laid down by American capitalists is that on the Pacific coast between the Isthmus of Tehuantepec and Valparaiso, Chili.

France has a total length of 24,010 miles, of which 10,092 are the property of the State. The most important of the submarine connections of France are the two lines which connect Brest with the United States.

As already mentioned Denmark is fourth on the list, with 9,488 miles. Germany has 9,228 miles of cable, of which more than one-third is owned by the Government. Its most important cable service is that between the Island of Borkum, Fayal and New York City. The seventeen other countries which take a financial interest in cables have altogether only 11,131 miles of lines, nearly all of them owned by the various governments.

New Railroad Track Wanted.—Several of the American magazines published for railway men and engineers are asking for the invention of a new kind of railway track. The present track, they say, has been the same for thirty years and cannot bear fast travel as it should. The old wooden cross-tie is in use everywhere, though it was long ago out of date. There is no evenness or elasticity in the broken stone and gravel upon which the ties rest. The foundation is unequal. It requires the most constant attention. A flood will destroy it in a few hours. American inventors are not idle, but improvements in this direction are slow. Iron and steel ties have been tried with indifferent success, and the idea of making ties from refuse leather has been found impracticable. Something brand new in railroad ties is in order and some American inventor probably has it up his sleeve or in his mind.

Electric Motors Wanted in France.—There has been an inquiry at this office for prices of small electric motors. They should be of from one-twelfth to one-tenth horse-power, as compact as possible, and capable of running in two directions. Prices should be submitted for samples of 1 and in lots of 100 and 1,000.—George H. Jackson, United States Consul, La Rochelle, France.

The Largest Manufacturers of
MOUSE, RAT AND GAME TRAPS IN THE WORLD.

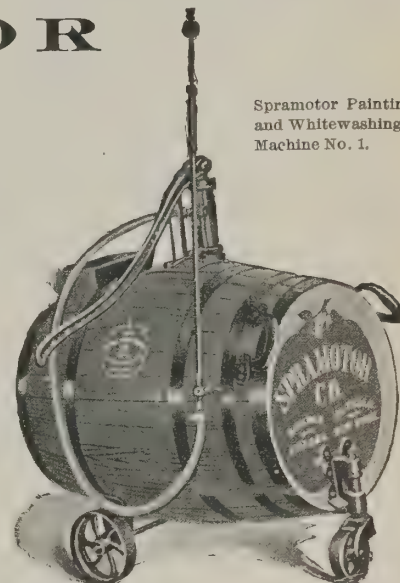
A diagram of a simple bow, showing a single curved limb and a circular head.

Cable Address: "Spramotor," London, Canada. Codes: Directory, A B C 4th, and Western Union.

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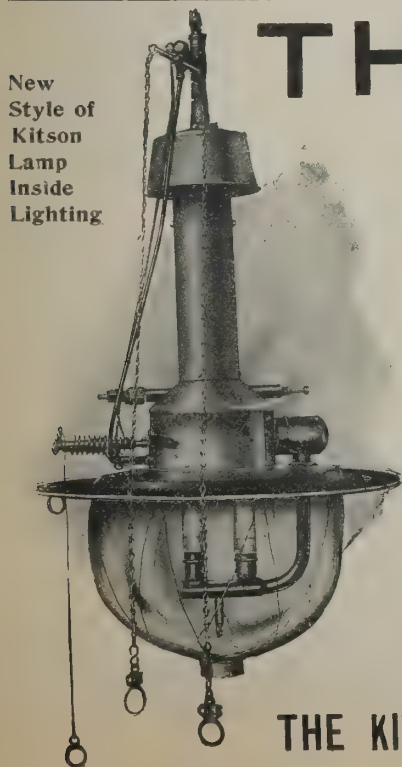
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The Domestic Incandescent Oil Lamp.



Growth of the Collar and Cuff Industry.

COLLARS and cuffs! "Fudge, there cannot be anything especially interesting in them," the average reader will say, but the industry is one of peculiar interest from the time of their invention down to the present era of the machine-made articles. When the wife of a blacksmith, in Troy, N. Y., U. S. A., got tired washing and ironing her husband's shirts, with collars attached, it started her to thinking, and she finally picked up her scissors, cut a paper pattern and then the linen for a collar. That was over seventy-five years ago, and it was the first separate collar ever made in the world.

This forgotten woman was the mother of invention that first conceived the idea from which has sprung the great industry that now provides this article of neckwear in artistic shapes for men and also mannish women. To-day the use of machines has supplanted hand labor in nearly every department of the industry, not only in the factory, but also in the laundry, and these machines will be seen in operation turning out collars and cuffs ready to wear in the forthcoming American World's Fair.

Visitors will see the entire process of collar and cuff manufacture, from the linen cloth to the finished product. Grouped near the machinery will be fine show-case displays of the numerous styles of cuffs and collars.

When the blacksmith's wife started the fad of detachable collars it was soon looked upon as a great reform in men's wear in the little town of Troy. Old Ebenezer Brown, who had retired from the Methodist pulpit and was devoting more time to saving dollars than souls, ran a small dry goods store, and was the first person to start a collar factory. The manufacture of collars soon became a paying business for Parson Brown, and history does not record that he ever returned to the pulpit.

This Yankee-witted parson, it seems, was blessed with a large family of girls, and at first they made all the linen collars, the cloth being cut to shape with scissors, hand-stitched and starched and ironed upon the kitchen table. Soon the increasing demand for Brown's "store collars" became so great that he was compelled to secure the services of a large portion of the wives and daughters of the whole town. They flocked to his store, which was enlarged, where the cloth was cut on a wooden pattern, which was the forerunner of the modern cutting-table. They then took the material to their homes and made, washed, starched and ironed the collars, and the shrewd parson paid them in merchandise from his store. At that time the collars were tied around the neck of the wearer with tape string and were known as "string collars." It was too early for the necktie to supplant the string. These heavy, two-ply collars, starched as stiff as a board, were supported by haircloth stocks buckled at the back of the neck.

For a long time other collar manufacturers imitated Parson Brown by making collars as a side line to some other business, and it was not until 1843 that the first separate business of collar and shirt bosom manufacture was begun. Then the independent stock and collar maker appeared, and another man added a laundry to his collar factory and laundered his own goods. Up to his time everybody was wearing home-made linen cuffs and shirts. In 1845 the collar business put the idea into some man's head to start a cuff and shirt factory in Troy.

Then the invention of the sewing-machine followed, and it was soon introduced into the manufacture of collars, cuffs and shirts, despite the cry of the workers against the labor-saving machine. Then the application of steam power later gave the industry a wonderful impetus by greatly decreasing the cost of production and causing a corresponding decrease in the price to the consumer. Then, from time to time various machines for this special line of work were invented, until the industry thereby was enabled to reach its almost perfect state of to-day. About \$9,000,000 are invested in this industry in the one city of Troy, and American collars and cuffs are sold all over the world.

High Aims of United States Commerce Secretary.

AMERICAN policy was never better defined than when Secretary Cortelyou, of the Department of Commerce, declared recently in an address to the New England Jewelers and Silversmiths' Association that it was "constructive, not destructive." Speaking of his efforts to make his department useful to commerce he said:

"The department aims to be helpful to such interests as those you represent. We shall try to establish high standards in its work. We shall try to make it a business department. We shall try to supply it with modern appliances and up-to-date equipment. We shall try to secure for it the best trained and most intelligent personnel possible. We shall do away with useless red tape and meaningless ceremony in the conduct of the public business. We shall try to have its chief officials men who are directly accessible to the people, loyal in their service and devoted to their work. We shall, in every bureau and division, set a high standard and a high ideal, and while many of us may not measure up to either, we shall give to the work the best that is in us."

Our Trade with Switzerland.—A London correspondent of the *American Machinist* says: "While our British exporters of machinery and general manufactures have been content with a 4 per cent. increase in their trade with Switzerland during the last seven years, American exporters have increased the value of their business with that State by 58 per cent! The comparison is more remarkable when we consider that Switzerland is within two days' easy journey of London, and is about ten to fourteen days from New York."

New Precious Gem Found in America.

A NEW gem, lilac colored and transparent, has been discovered. It has been found in two distinct places in California, the most plentiful deposit being only a short distance from the town of Pala, and within a mile of the famous rubellite mine near that place.

At the Museum of Natural History a thorough analysis of the mineral has been going on under the direction of Dr. Charles Baskerville, of the University of North Carolina, who won a reputation among scientists last spring by his address before the American Chemical Society on certain rare earth used for many new forms of incandescent lights. By the action of the Röntgen rays he excited a crystal of the new mineral sufficiently to make it photograph itself when placed upon a sensitive plate and kept in the dark for ten minutes.

This unusually phosphorescent mineral was discovered by Dr. George F. Kunz, president of the New York Mineralogical Club and a gem expert. He has given a description of the finding and of some of the properties of the gem. That the new stone is unlike any other known, however, was determined by Dr. Baskerville in his analysis at the museum. In a scientific article which he has prepared for publication he gives it the name of Kunzite, in honor of its discoverer, Dr. Kunz. Almost simultaneously with the choice of this name, Prof. Edward S. Dana, of Yale University, who has been informed of the progress of the analysis, wrote suggesting the same name.

Near Pala, Cal., crystals of the new gem as large as a man's hand were found. The tint is described by Dr. Kunz as a sort of "rosy lilac," varying from a very pale tinge, when looked at transversely, to a rich amethystine hue, when observed lengthwise. When cut and mounted in a certain way, one of these crystals yields a gem of unusual beauty. The discovery is of more than ordinary interest because nothing similar to the new gem has ever been seen by gem experts or jewelers before.

In the course of tests by Dr. Baskerville the Kunzite crystals were subjected to the action of ultra-violet light without showing any evidence of fluorescence or phosphorescence, and it was not until it was subjected to the bombardment of X-rays of very high penetration that it became at all fluorescent. On its removal to a dark chamber, it exhibited a persistent white luminosity never before observed in its class of minerals. The color of Kunzite is distinctive. As a cut and mounted stone, the softness of the lights gives to it a variety of beauty possessed by no other jewel. It nearly approaches in color some varieties of pink topaz and pink sapphires.

Can Anybody Be Much More Accommodating?

MOST Americans, certainly all of the really successful ones, are courteous and accommodating at all times, but a New Yorker who recently encountered an unexpected rainstorm the other day found what was to him a new wrinkle in American department stores. He had no umbrella, only a cane, and if any situation is calculated to make a man feel foolish it is to walk in a busy street on a rainy day swinging a cane. The man took momentary shelter in a New York dry goods store and bought a collar, not because he needed it, but because he thought he ought to pay rent in some shape.

To the young woman who sold him the collar, and who was comely enough to be worth talking to, he voiced, as politely as possible, his views on the weather and his opinion of the man who would be caught out on such a day only with a cane.

"That's easy," said the young woman. "Why don't you let us send it home? If you'll just step over to the accommodation desk with me I'll fix things for you in a minute."

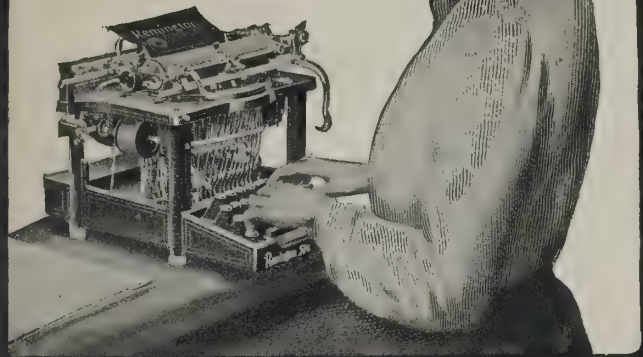
The accommodation desk was new to the man, but he followed obediently, and in a far-away corner of the store he was made acquainted with another young woman who seemed to take as a matter of course a request to send a cane to a downtown office for a man who had no account at the store and who had never patronized the store more than twice in his life. There was apparently nothing unusual in the incident, so far as the store folks were concerned, but it impressed the New Yorker with a phase of American trade with which he was not familiar.

Radiator as an Incubator.—While carrying on a series of experiments in his laboratory with chicken life during the embryonic stages, Dr. Counter, a young dentist of Toledo, U. S. A., succeeded in hatching a chicken by means of an ordinary steam radiator. The egg was placed in a small paper box and hung from the radiator during the period of incubation. At the end of the twenty-one days the chick was hatched, and has since been kept in a paper suit box, about 3 by 1½ feet, with a little shelter in one corner of it. The box was hung near the radiator, and its inmate, when three weeks old, was as strong and vigorous as one could expect a chicken to be raised under natural conditions.

Fencing Free of Duty in Costa Rica.—By a recent decree, woven galvanized steel wire fencing will be admitted free of duty, provided the widths of the meshes is not less than 8 centimeters, or a little over 3 inches.—*John C. Caldwell, United States Consul, San José, Costa Rica.*

Sewing-Machine Exports Increased.—American sewing-machines were more popular than ever abroad last year, the exports aggregating \$5,340,474, a gain of about three-quarters of a million dollars.

The Light Touch



tells that it is a
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Remington Typewriter Company
327 Broadway, New York

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CLOTHES
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**CAMBRIDGE
EXTENSION
LADDERS.**

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Manufacturers and Exporters,
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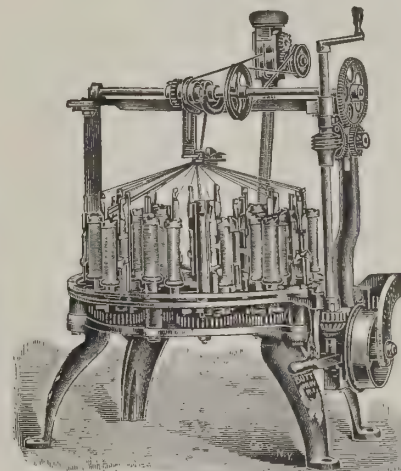
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THE Ingersoll watches as shown here
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established new standards of
value. Buyers of watches, in
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must consider this line. For-
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customed to purchasing cheap
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pieces. The output is five thousand watches
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**Yankee, \$7.80 doz.
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One gross of watches packed for export
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THE WORLD'S GREATEST MECHANICAL TOY

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A Top within a Top. Made of STEEL, nickel-plated. Is
a veritable **Rotary Engine**, gyrating in contrary di-
rections while running at full speed. Its average spin
is 8 minutes. Performs over 40 tricks. A child can spin it in 3 sec-
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sight. Over 500,000 sold in 17 months in the United States. The ac-
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\$18.00. Upon receipt of Eighteen Dollars in U. S. gold, or its equivalent, we will
box ready for steamer, f. o. b. cars New York, **one (1) gross of the
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Prompt Deliveries and Entire Satisfaction Guaranteed. **ORDER NOW!**

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A Wonderfully Interesting Commercial Map.

ONE of the largest maps in the world has just been installed in the office of Secretary Cortelyou, of the Department of Commerce, at Washington, U. S. A. It is known as a commercial map of the globe, and it probably contains more information of a commercial character than any other map ever made. Its dimensions are 16 feet long by 7½ feet wide, and the sixteen sheets of the largest size hand-made paper, of which it is made, were so delicately fitted together that it appears like one huge sheet.

The map was prepared by the United States Coast and Geodetic Survey, under the direction of Secretary Cortelyou, with special reference to the needs of his department. Practically all the large maps and atlases published in recent years were consulted in the compilation of names, shore lines and political subdivisions, with much additional information derived from detail charts, gazetteers and books of travel. The reports of the Board of Geographic Names were taken as authority for the spelling of names, but thousands of names are given which do not appear in these reports. Names which were thought to be of little value for the purpose of such a map were omitted, however, in order that those given might stand out with greater distinctness.

A unique feature of the map is the location of the continents, which is different from that shown on any other map or atlas heretofore published. It has been the custom of all mapmakers to show the Western Hemisphere at the left end of the map and the Eastern Hemisphere at the right, Bering Sea being the dividing line. On this map the American continents occupy the center, thereby permitting the entire Pacific Ocean and the trans-Pacific steamship and cable routes to the Philippine Islands and Hong Kong to be shown without a break in the center of the Pacific, as has always been the case heretofore. The Eastern route via the Suez Canal to the Philippines is also continuously shown.

Cities having a population of between 10,000 and 40,000 are indicated in a distinctive manner. All the United States consulates are given, as well as most of the consular and commercial agencies, and in those parts of the world where international complications are likely to occur all steamship ports are shown. All submarine cables are given, including the new cable between San Francisco and Manila, via Honolulu; the new cable between Victoria, B. C., and Brisbane, Australia, via Fiji Islands; the new cable between New York and Emden, Germany, via the Azores and Lisbon; the new cable between Port Natal, South Africa, and Perth, Australia; the new cable under construction between Seattle, Wash., and Sitka, Alaska, and the telegraph line from Vancouver, B. C., to different points in Alaska, as Juneau, Dawson City, Valdez, St. Michaels and Nome. The Trans-Siberian Railway from St. Petersburg to Port Arthur and Vladivostok is given, as well as the route of the Cape to Cairo railway in Africa, as yet uncompleted, and the spur of the Manchurian Railway that is being built directly to the back door of Peking, via Rhaihr and Ralgan.

The most difficult feature in compiling a map of this kind is in defining the political boundaries, which are as accurate as could be ascertained down to the very day the work was finished. Among the recent changes in boundaries may be mentioned the new Abyssinian boundary, the new arbitration boundary between Chili and the Argentine Republic, the new boundary between Brazil and Bolivia, the Anglo-Turkish boundary at Aden and the Spanish and French agreements on the west coast of Africa. There also is a question as to the political status of certain other countries, as for instance the province of Novibazar, between Austria and Turkey; the Egyptian Soudan and certain leased sections, as the locality of Lodi, between British East Africa and the Congo Free State.

Technical Education by Different Methods.

THE educational question is one that is intensely alive at present in all the great national centers of the earth. Contributions come to it from many sources, but some of the controversialists do not consider the subject from the viewpoint which is taken by James M. Dodge, president of the American Society of Mechanical Engineers, in a recently published article, in which he makes comparison between the improvement made by the boy who enters a training school and that made by the boy who goes to work at once in a mill or factory. He finds that the advantage in self-improvement lies with the boy who goes to the training school. He calculates the problem in an ingenious way, figuring the boy's wages as interest and estimating his cash value, as thus established. That is to say, the untrained boy of 16 can earn \$150 a year. This is 5 per cent. on a valuation of \$3,000, which may be taken as the "present worth" of the boy.

Mr. Dodge figures that for nine years the boy who goes into the shop increases his earning power \$65 a year, or his capitalization \$1,300 a year, while the boy who enters a training school increases his ability to earn \$105 a year, or his capital value \$2,100 a year. In other words, he estimates that the boy who goes directly into the mill or factory at 16 will be able upon arriving at 24 to earn \$15 a week. The boy who enters the training school will be able to earn \$20 a week, and will reach this point at the age of 20 instead of 24. Only one boy in twenty, Mr. Dodge declares, who goes into the factory direct, ever gets above the point of \$15 a week.

The calculations made by Mr. Dodge are undoubtedly for a number of different trades, taking an average. His conclusion is that it is vastly better for a boy to capitalize himself, so to speak, by entering the training school than to go to work at once in the factory. He argues that he becomes a more valuable man to the community for all the rest of his life. Howsoever advan-

tageous this plan may be, very few boys are financially able to thus provide for themselves. They have to get into active earning before the age of 20.

On the other hand, many of our most successful Americans are those who have gone into the professions or occupations in which they have won successes without much more education than they have acquired by their own efforts outside of schools. They have reversed the present order of technical training, earning their support by practical experience and acquiring more knowledge in their spare moments. Young men who can apply themselves thoroughly in this way will always have a distinct advantage in America as well as in other countries. The only difficulty is that they must work harder and have more ambition than their more fortunate rivals who are able to pay to learn. America, however, seems to be able to produce both sorts of progressive, ambitious chaps.

Uncle Sam as the Fisherman's Friend.

WITHOUT being at all paternal, the United States Government goes into subjects that it would scarcely be expected to take within its official observation. There are fishermen all over the world, more of them amateurs than professional, and whichever they may be, they all are as much interested in the preservation of the various families of the finny tribes as they are in making record catches. Dr. Hugh M. Smith, in *Collier's Weekly*, describes the workings of the United States Fish Commission in an interesting article, from which the following extracts and summaries are taken:

There are now thirty-five Government fish nurseries, located in twenty-five States. In the stocking of public waters it is necessary to deal not with thousands or millions of young fish, but with hundreds of millions and even thousands of millions. Thus, during the current fiscal year, the indications are that previous records will be surpassed, and two thousand million fish, hatched by a paternal Government, will be turned loose to shift for themselves.

Upward of thirty different species are bred at the Government stations, but a very large part of the energy of the commission is applied to the great commercial species—the cod, the shad, the salmon, the whitefish, the lake trout, the wall-eyed pike, the flounder and the lobster—the total annual catch being worth upward of \$17,000,000, and one and three-quarter billions of young having been sometimes liberated in a single season.

A large proportion of the eggs handled are taken from fish which have been caught for market, and hence would have been lost but for the commission's efforts. In the case of the lobster, the shad, the lake trout, the pike, perch and some other species, every egg taken, every fry hatched, represents a clear gain over nature. The leading river fish of the Eastern seaboard is the shad. The great multiplication of all kinds of fishing appliances results in the capture of a very large part of the run each season before the shad reach the spawning grounds.

The steady increase in the shad catch in the face of these conditions is evidence of the beneficial effects of propagation. In 1880 the total yield of this species from Maine to Florida, the extent of the United States Atlantic coast, was 18,000,000 pounds; during the four succeeding years the supply in many of the streams decreased to such an extent that the abandonment of the fishery was imminent. From 1885, when the largely increased plants of fry began to produce results, until the present time, the trend of the fishery has been steadily upward. Against a product of 18,000,000 pounds, worth \$995,000, in 1880, is to be placed an annual catch of over 50,000,000 pounds, valued at \$1,700,000.

Very lucrative shore cod-fishing has been established on grounds that were entirely depleted or that had never contained cod in noteworthy number in the memory of the oldest inhabitants. There is much unsolicited testimony of many people who have profited from the past ten years' hatching operations at the Government's Gloucester and Wood's Hole stations.

The most important acclimatization experiment with indigenous fishes has been the planting of the shad and the striped bass on the Pacific Coast. Comparatively small plants of young fish immediately took root and multiplied, and in a few years both species became abundant. The expense of introducing these two fishes into Western waters was less than \$5,000.

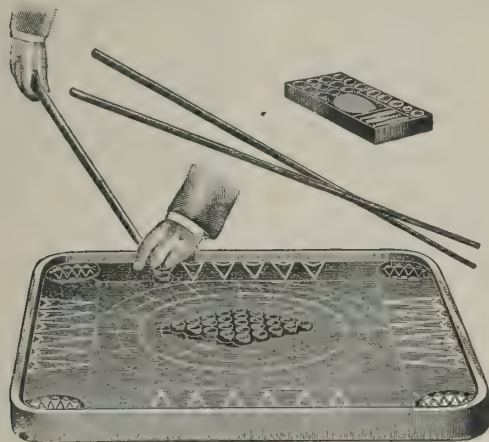
Great Gain in Trade with Germany.—Germany's trade with the United States has advanced rapidly in the last decade. Our exports to that country in 1903 were \$225,000,000 and our imports were \$122,000,000. Our commerce with Germany has grown much more rapidly in the last decade than that with the United Kingdom. In 1893 our exports to Germany were only \$88,000,000; in 1903 they were \$225,000,000, an increase of over 150 per cent., while in the case of the United Kingdom an increase is shown of only 30 per cent.

The New Sturtevant Catalogue.—Readers of THE AMERICAN EXPORTER who are interested in blowers, engines, motors, generating sets, forges, steam-heating apparatus and various other devices in that line, including disk fans, will be interested in this new hand-book of the B. F. Sturtevant Company, Boston, U. S. A., which they can obtain upon application. The catalogue is a model one, from the point of compressing a vast amount of information into a relatively small space.

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NOTE.—Each Game Board measures twenty-nine (29) inches square (53.16 centimeters); one dozen Game Boards, boxed for export, weigh 206 pounds (96.4 kilos, 13.76 cubic feet (0.3896 cubic meters).

[illegible]

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Yours very truly,

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is one that meets with the approval of every one requiring an

that will deliver the maximum of refrigeration at the minimum of labor and cost—
such a machine is the standard

YORK Ice Making and Refrigerating Machine,

varying in capacity from 2 to 600 tons refrigeration. The best and most economical to operate, and most effective ice machine that can be made.

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No. 63. 60 inches long; 36 inches wide; 52 inches high; weight 400 pounds
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Turbine Engines on Great Steamships.

FIRST of the great steamship companies to utilize the turbine principle of propulsion upon its vessels is the Cunard Company. Cable advices announce that it has made a contract for two new big steamships, to be named the Caronia and the Carmania, the latter to have turbine engines and both to be additional to the ships which the company must build under its agreement with the British Government. The decision of the directors of the company to adopt turbine engines is an event of no small import. It may mark a revolution in marine enginery not only for merchant vessels, but for those of the navies of the world. The decision was reached after a thorough investigation by a commission, of which Lord Inverclyde was the head, and the change would be adopted without the most positive assurance of success. The new turbine steamship is intended to be not only the largest, but the fastest merchant vessel afloat, and it must be specially designed for naval auxiliaries in case of need. Consequently, its engines must be of the most powerful kind. Steam economy is not yet claimed for the turbine engines over the quadruple expansion type of equivalent power, but they occupy much less space and are simpler in their operation, producing little or no vibration. It is believed that they will prove cheaper to operate on a heavy scale, in addition to the economy of space, which is an important point in sea-going vessels.

Commenting upon the action of the Cunard directors, the *New York Journal of Commerce* says: "The turbine steam engine is a comparatively recent product. It was first used with effect as a stationary engine on land to drive machinery, and has been successful on a constantly increasing scale. It has been tried on vessels of smaller size on water, and there also success has been achieved and has not been checked by increase of size thus far. The Inverclyde Commission had the benefit of the assistance of Mr. Broch, of the firm of Denny Bros., who was one of the first to apply the turbine to marine engines, and is connected with the firm that has built the largest steamers yet using them. It is evident that his experience has produced the conviction that it is adapted to the huge vessels that the Cunard Company is about to build. A mistake would be so costly that hardly a chance would be taken of incurring it in such an important venture.

"There is no doubt about the interest with which the development will be watched the world over, and it seems probable that in the marine construction of the future, both commercial and naval, the old complicated and cumbersome type of engine will be gradually displaced. There is promise of decided economy of space in the vessel, increased speed, practical elimination of vibration and reduced cost of operation, all of special importance in ocean-going craft."

The Allan Line, plying between Great Britain and the Dominion of Canada, has also taken up the turbine idea. The new steamers the company is now building for its improved Canadian mail service are to be propelled by turbines instead of by the usual reciprocating steam engine, and it is claimed for this method—adapted, as it is to be, in an especial manner for Atlantic navigation—that it will so greatly change for the better the movement of large vessels at sea as to bid fair to revolutionize Atlantic passenger travel. The first of these steamers, named the *Victorian*, is now well advanced, and is to be ready for her tour of duty in the autumn of the present year. The *Victorian* will be by far the largest steamer, as she will also be the swiftest, of the Allan Line fleet. She will be fitted in the most modern style for upward of 1,500 passengers, and is expected, by reason of the absence of the vibration inseparable from the ordinary steam engine, and the rapidly and unbroken steadiness of revolution in her shafting and propellers, to be at once noiseless and steady in a seaway, even while exerting all her great power.

In the application of the turbine principle to all sorts of propulsion it is noteworthy that American inventors have led the way. It is to the credit of our British cousins that they have not been slow to recognize the merits of the turbine.

Real Daily Newspapers on the Ocean.

SOME enterprising Americans are planning a new international daily newspaper which they expect will be launched—and that's the best word for it—on May 15th. It will be printed simultaneously on most of the trans-Atlantic fleet while they are in transit.

The projectors expect to place news of the world before the 20,000 to 30,000 passengers afloat at breakfast time every day this summer much in the form that the readers are used to finding it in New York or London. The paper will be made up like a regular city journal.

The Marconi apparatus, of course, will be the means by which the news will reach the ships. All the lines except one are equipped now with the wireless instruments. The ships of the American, Red Star, French and both German lines and some of the Atlantic Transport ships now issue a daily bulletin of news from a summary supplied them by a bureau of publicity, which has its headquarters in Boston, U. S. A. The Cunard Line gets its news from Reuter's agency.

Ships with the Marconi equipment are now practically in constant touch either with one or other of the Marconi transmitting stations at Poldhu, England, and Canso, Nantucket and Babylon, on the American coast. It is completely practicable to expand the present news service into as full a telegraphic report as a well-managed newspaper need have ashore, covering everything from the Far Eastern war to market reports.

The newspaper enterprise will be under the control of a single concern, which will establish an adequate plant on each of the ships. The editorial

and business offices will be established either in New York or London. It is a matter of detail to supply each ship on its sailing with sheets on which the advertising matter has already been printed, so that the news only need be "set up" and printed on board ship. The promoters of the enterprise argue that a daily circulation of above 20,000 copies will attract a high class of advertising. The newspapers will be assured of a reader in practically every passenger and ocean passengers, as a class, are a good class to appeal to. Naturally hotels, theaters, resorts and railroads will figure largely in the advertising columns. Each ship will require a typesetting machine, a stereotyping plant, a good quick press and the men to run them.

The Associated Press offices in New York and London will supply the news. On the first three days of a ship's journey eastward the despatches will be sent from New York. Then London will take up the service.

American Machinery in Syria.

ADVANCES in agricultural methods are being made everywhere in the world. United States Consul G. Bie Ravndal, at Beirut, in a recent communication to the Department of Commerce tells some things that will be of interest to many of our readers. He says in part: "There is no economic movement in Syria more important or more interesting than the introduction of American machinery. Owing largely to emigration to North and South America, wages in this country have been growing at such a rate that it is no exaggeration to declare an increase of 40 to 50 per cent. during the last fifteen years. Wages are still low, the unskilled laborer receiving an average wage of 25 cents a day. I have no doubt, however, that the age of machinery is dawning upon this country.

"Agriculture is the main industry of Syria, but it is in an extremely backward state, the implements commonly in use being the same as those in vogue in the ante-Christian era. Large tracts of land of great fertility lie waste and depopulated, though showing traces of former prosperity and teeming populations. Agricultural and irrigating machinery and railroads will prove strong factors in the redemption of these regions. In the plains of Sharon, Esdraelon, Hauran, Bekaa, etc., modern agricultural machinery has begun to appear, and I am glad to report that most of it is of American make.

"Previous to 1902 American plows and reapers were operated in the Haifa neighborhood (upper Sharon) under the auspices of the American and German members of the Temple Colony. In the Bekaa (Coele-Syria) a Jesuit missionary organization conducted a 'model farm,' on which was employed a limited variety of French machinery. In certain Jewish colonies modern machinery was experimented with, but as they were subsidized by foreign capitalists work was largely perfunctory. It was not, however, until 1902 that natives of Syria and Palestine began using machinery in tilling the soil and in harvesting the crops. From now on the use of agricultural machinery and modern implements will grow steadily here, and there seems to be no reason to doubt that American manufacturers will control the market. Reapers, thrashing-machines, grist-mills and wind engines come from the United States."

Record Beaten in Exports of Manufactures.

AMERICAN manufactures exported in February of this year were greater in value than in any preceding February, and formed also a larger per cent. of the total exports than in any preceding February. For the eight months ending with February the total manufactures also exceeded the total in the corresponding eight months of any earlier year. The fiscal year 1900 was the banner year in exports of manufactures from the United States, but from present indications the fiscal year 1904 will show an even larger total of manufactures exported. The month of February shows a total of \$38,000,000 worth of manufactures exported, against \$34,000,000 in 1900, while for the eight months ending with February the total is \$288,000,000, against \$268,000,000 in the same months ending with February in 1900.

In the eight months for which a record is already made the total exceeds by \$20,000,000 that of the highest record previously attained—that of 1900—while the fact that February, 1904, exceeds by \$4,000,000 the figures of February, 1900, also indicates that the increase noted in the earlier months of the year is continuing in the latest available months, and thus likely to carry the year's total considerably beyond that of 1900. Not only in the grand total of manufactured exports does February exceed that of the corresponding month in any preceding year, but the percentage which manufactures form of the total is also larger than in the same month of any earlier year.

New York the Candy Center of the World.—It has been stated recently that candy costs the people of the United States about \$150,000,000 a year. New York is preeminently the candy city of the world. It has more establishments engaged in its manufacture and more stores handling it than any other city on earth. The output of England, France and Germany is not as large as the output of the United States, and probably New York city alone produces more than either one of the three countries alone.—*American Industries.*

Growth of American Industrial Corporations.—A compilation by the *New York Journal of Commerce* of dividends announced by American industrial corporations, payable in April, shows an increase of more than \$2,300,000 over the same month in 1903 and of about \$2,100,000 over April two years ago. The total, based on the returns so far, foot up about \$22,200,000. This shows the solid basis upon which our industries are planted.

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Cable Address: "Estey," Brattleboro, U. S. A.

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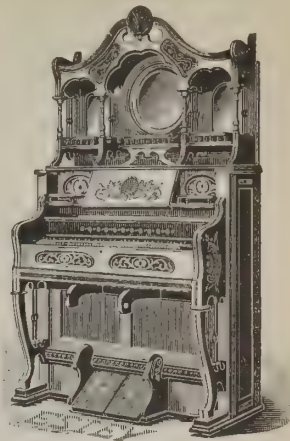
The **Estey Reed and Pipe Organs** are specifically made for use in churches, chapels, music and lecture halls, Masonic lodges, schools and residences.The **Estey Pianos** are made in several styles of Upright and Grand.

Our Catalogue, illustrating and describing the various styles of Organs and Pianos made by us, mailed postpaid to all parts of the world.

None but the most skilled workmen and the best of material are employed in the making of the **Estey Organs and Pianos**. Prices quoted F. O. B. cars at New York City. Specify "Estey," and when ordering, to avoid errors, please mail us a duplicate of order.**NOTE.**—To facilitate the handling of our export trade we desire to communicate with one responsible musical instrument dealer in each trade center of the world.

ESTEY PIANO. Style 20.

Made in mahogany, oak and American walnut. 7½ octaves, scale A to C. Height, 4 feet 3 inches; Length, 5 feet; Depth, 2 feet 3 inches; Weight, boxed, 850 pounds.



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Solid walnut or oak case. Height, 6 feet 8 inches; Breadth, 3 feet 10 inches; Depth, 1 foot 11 inches; Weight, boxed, 400 pounds.



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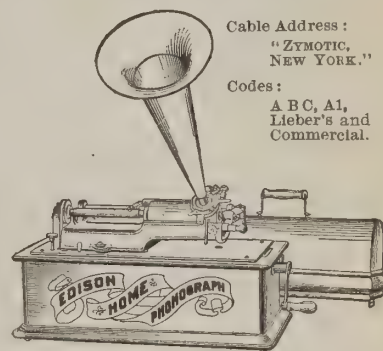
Standard size	\$0.50
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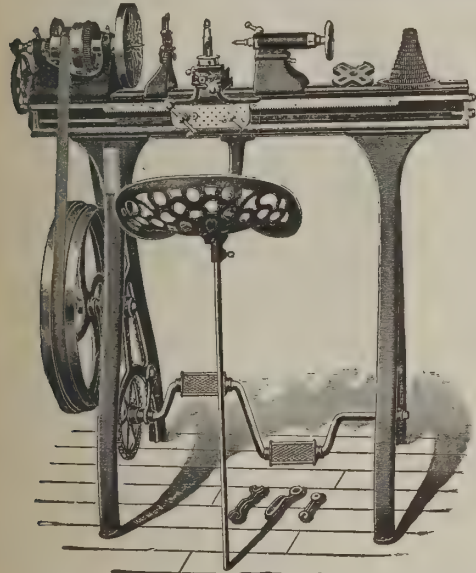
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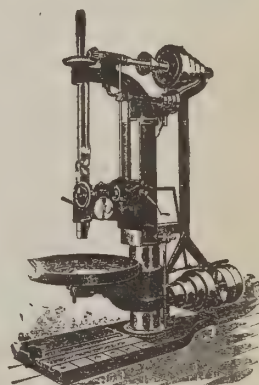
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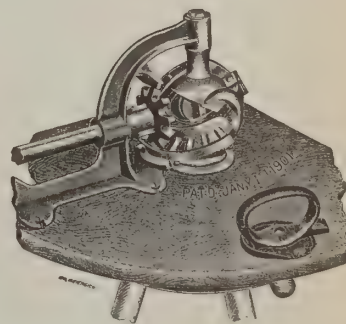
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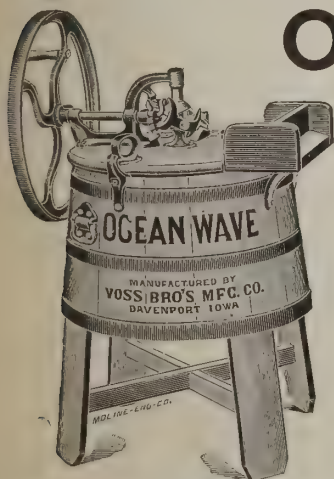
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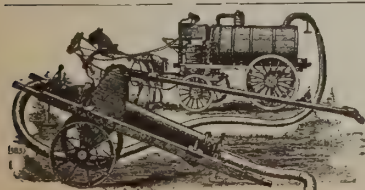
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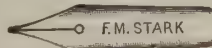
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Chicago's Novel Underground Freight Railroad.

AN interesting illustrated article is printed in *Popular Mechanics* concerning the underground railway which is being installed in the city of Chicago, which city is the metropolis of the inland of the United States. As told by the writer in this periodical, the effort to relieve congestion is made with a liberal expenditure of American energy, much money and with prospects of the usual good results. The writer says:

Forty feet underneath the city of Chicago is being built a freight railway system, which, primarily, will handle 50,000 tons of freight daily, and ultimately 300,000 tons daily. The system at first will be twenty miles in length and will honeycomb the principal business streets, connecting all the depots, freight houses, hotels, office buildings and business houses. The freight cars will run into the basements of the big buildings, each basement being a miniature freight depot, provided with switches and other facilities for loading and unloading freight.

The freight railroad is being laid in the great system of tunnels underneath Chicago's streets. It is now proposed that another tunnel be dug above this tunnel for the construction of underground passenger railways to relieve the streets of the congestion of passenger traffic. Thus, if this latter scheme is carried out, Chicago will have avenues of traffic from three to five stories high. Forty feet underground the freight cars will travel; immediately above these underground cars will carry passengers to and fro; the surface cars will perform their usual duties on the street level; the river above the tunnels and below the car bridges will have its accustomed amount of boat traffic, and above the river the cars will speed along the elevated roads. Probably the next step will be to build a two-story elevated road, with cars running above those on the present elevated system and six stories above the freight line, which is two stories underground.

The Chicago underground freight railway will be unlike anything ever before attempted by any city in the world. Its object is to expedite the delivery of freight, to aid the cramped railway terminal facilities and to relieve the congestion of teaming on the streets, which is rapidly growing intolerable. Seven million dollars have already been spent in constructing the tunnel.

The work of building the railroad is progressing rapidly. Already three miles have been constructed, and two electric locomotives and twenty-four steel cars are in operation. The Illinois Tunnel Company, the owners of the project, have let the contract for 3,000 steel cars and 100 electric locomotives, to be in operation June 1st. The freight cars will be employed in hauling every kind of freight, including coal and all kinds of merchandise. The electric locomotives will have a capacity of 250 tons each on the level and of 100 tons on the inclines, which are to be used in connecting the railroad yards and buildings with the tunnel. The cars will each hold twenty-five barrels of sugar, flour or general merchandise or seven tons of coal.

One of the most valued services of the underground freight railway will be in relieving the cramped condition of the Chicago railway terminals. It seems that the railroads exercised very little foresight in their construction when they built them. Forty per cent. of the total railway mileage of the United States has terminals in Chicago. Thirty-eight great railroads and railroad systems have their terminals there, and these thirty-eight are compelled to receive and deliver their freight from a mere half-dozen freight depots.

At present more than \$50,000,000 is spent yearly for trucking freight across the city of Chicago from freight terminals to warehouses and stores. The cost to merchants averages about 90 cents per ton. With present facilities it is about the limit of capacity for a team to haul two truck loads of freight on a business day from any one of these depots. Under the tunnel system many times as much freight can be delivered and at a smaller cost for truckage.

How Electricity Is Replacing Steam.

AMERICAN machinery is coming into use everywhere throughout the world, and announcements are continually being made of important steps in the development of electricity as a motive power in place of steam. The *New York Tribune* in an article on the subject gives some interesting information: Another English railway has changed its motive power. It was formerly operated by steam. Now it is run by electricity. The line reaches northward from Liverpool to Southport, a distance of something like eighteen or twenty miles. Active steps for equipping it with the third-rail system began almost exactly a year ago, and the conversion was virtually completed before the close of 1903. Service was not initiated, however, until a few days ago. Trains are made up like those on the Manhattan elevated roads in New York City, partly of motor cars and partly of trailers, though only two of each kind are required at present. When a train reaches either end of the line no switching is necessary to bring the engine to the head. It is only necessary for the motorman to walk to the other end, move two or three electric switches and everything is ready for a return trip.

Two marked improvements have resulted from the change. The same thing was noticed in New York when electricity replaced steam on the elevated roads, but not to the same extent. Formerly there were seventy-four trains a day each way on the division reaching to Hall's Road, which is only $7\frac{1}{4}$ miles from Liverpool, and thirty-six went on to Southport. The number does not look large, but it taxed the facilities of the company to the limit, and that is why the change was made. Now 119 trains run to Hall's Road, and sixty-five of them continue to Southport. In other words, the capacity of the line has been multiplied about 70 per cent. The other gain is in speed. Trains that stopped at all stations formerly needed fifty-four minutes to make the run from end to end. Now they do it in thirty-seven minutes. With a solitary excep-

tion, the expresses took thirty minutes, and now they do it in seventeen. Formerly there were only two or three expresses each way daily, and now they run hourly.

The first English company operating a steam road outside of London to make even a limited use of electricity was the Northeastern. The old motive power is still retained for most of the system, but a large suburban service in the vicinity of Newcastle-on-Tyne is now conducted by electricity over a section of track laid years ago. The Liverpool and Southport is really a local line, and hence the conversion is complete instead of partial. In some ways, however, the action of the Northeastern company is the more significant. Pioneer enterprises demand greater sagacity and courage than imitations.

In the meantime the spirit of progress has been manifested in France, too. Not only is there an underground electric road in Paris, but electricity has displaced steam on one of the old roads running out of the French capital. When a new terminal station was built on the Quai d'Orsay, four or five years ago, electric locomotives were adopted to haul trains thither from the old station near the city limits, three miles away. So well has that experiment worked that the same means are at present employed to haul suburban trains to and from Juvisy, fourteen miles off. The extension is a small one, to be sure, but it is suggestive. There is no telling how much further it will go, nor how great an influence it will exert on the managers of railways in other parts of the country.

New American Plan for Training Mechanics.

I THOROUGHLY believe that it is the duty of every manufacturer to do his utmost to educate competent workmen through the apprenticeship system, but on account of the peculiar conditions obtaining in manufacturing in these days, the range of work in the shop is not always great enough to educate apprentices properly. I therefore hold with Professor Sweet that there should be "shop schools" established by the various trades—for instance, that the National Founders' Association should establish one or more schools in different parts of the country, under the direction of a properly constituted committee, this school to be supplied with work, from the different members, in such proportions as are suggested by the committee, the members sending the work to pay therefor at such rates as will assure a profit for the school, or, not being able to do this, to make a money contribution.

Undoubtedly as organized labor is now conducted, there would be much opposition to these schools, but this is a matter which should not deter the manufacturers. It seems to me there are only two questions to be decided in this matter, viz.: "Is it right?" and "Is it good business?" If so, then the manufacturers should forward the work and advocate the idea, as they have had in the past to introduce many advanced ideas and improved institutions, against the opinions of organized labor. They should press the policy with all the vigor at their command, with the certainty that in the long run the plan will succeed and the benefits inure to the fraternity.

Such schools as this would be of great advantage to each trade in many ways known to every manufacturer, outside of simply turning out competent workmen, and it is my belief that the establishment of such schools cannot take place too soon.—*P. W. Gates, in The Engineering Magazine for April.*

Improvements in Equipping American Machines.

ONE of the little niceties that go to make up a well-designed American machine are the dust-proof oil-hole covers which are coming to be adopted by manufacturers of nearly all types of machines, replacing loose plugs or caps, or bare oil holes having no covers at all. These devices not only locate the oil holes for the operator, and make sure that no oil hole will be overlooked, but prevent the holes from becoming clogged, conduct the oil to the right place, keep out dust from the bearing, do not become lost, and are directly responsible for a longer life of the bearing. Such covers have been particularly applicable to machine tools, where accurate fits and alignment are necessary, and to automobiles, where dust works into bearings so readily. We find, also, that builders of paper machinery, printing machinery and woodworking machinery are also utilizing covers of the same description because of the superior finish and evidence of attention to details given by such devices to their products.—*Machinery.*

Education and Industry.—An officer of an American pumping engine company was recently asked whether college men or men trained by practice are better equipped for industrial work. He replied: "Everything being equal, the practical man is likely to know more than the technical man about actual shopwork, but he is also likely to stop knowing when he should go on knowing." This feeling is general. The old-time apprentice, who developed into an all-around mechanic, is being rapidly ousted by the modern technical graduate who is a specialist. Even the modern foreman in America is no longer the product of apprenticeship. The trade school creates him.—*World's Work.*

Traction Engines for Brazil.—An American firm has secured a contract for 100 large traction engines and sixty-five of the biggest separators, equipped with self-feeders, recleaners and other special attachments for shipment to Buenos Ayres. The value of the contract is reported to be in the neighborhood of \$350,000. It is claimed to be the largest ever received for this class of machinery for shipment to one port.

American Sawmill in Britain.—An English journal says a firm of timber merchants has a new band sawmill at Newcastle-on-Tyne. The band mill is of American make and is operated by electricity.

TARR & WONSON'S COPPER PAINT

For Wooden Vessels' Bottoms, prevents boring of worms and all marine growth.

Awarded Eight Highest Medals:

Gold, Silver and Bronze.



Excels on Every Point.
Cheapest to Use in the End.

TESTIMONIAL.

NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

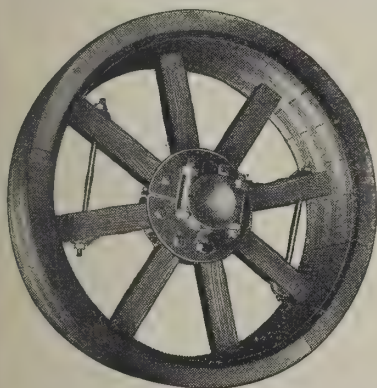
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RACING COMPOUND for Wooden Yachts' Bottoms,
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A complete line of Accessories for Cotton Machinery, Etc.,
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42, GRESHAM ST., LONDON, E. C., ENGLAND.

Subscribers, by obtaining timely information, may avoid making bad debts.
Every trader should read Stubbs' Weekly Gazette, with which is issued a supplement containing lists of creditors under all the important failures.
The Commercial Registers contain more than seven million entries.

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TERMS.—Subscription only, according to requirements.
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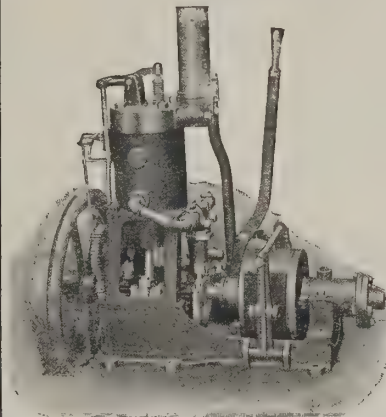
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Orders filled through export agents and also through FRANK S. DE RONDE CO., New York.
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High speed launch engines
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Over 5,000 Hercules Engines Sold

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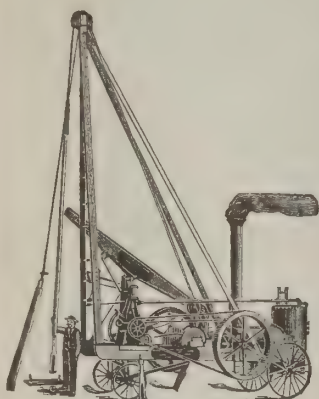


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Moerlein's Beers
STANDARD
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PURE, WHOLESOME WATER!

There is good, pure water in the ground if you know how to get it. The ordinary dug well is apt to be contaminated from surface drainage.



THE PORTABLE **STAR** DRILLING MACHINES

will tap the stream in the best possible manner, and will insure an abundant supply of good, pure water.

An energetic man may become rich doing well digging for his neighbors. With one or more of our machines he can build up a permanent and successful business.

The Star Drilling Machines are made in Ten Sizes. Will Drill 250 to 2500 Feet.

We make the strongest, the safest, the most complete and simplest machine. **Everything needed goes with it.**

ABSOLUTELY WITHOUT SPRINGS.

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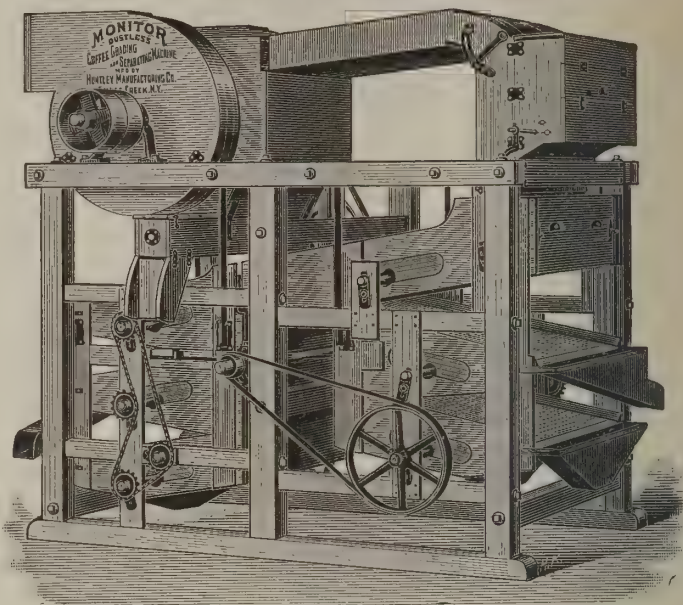
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Cable Address:
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Use "A-B-C Code, 4th Edition,"
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MONITOR COFFEE SEPARATOR AND GRADER.



This machine removes all foul material and fragments, makes clean separations and grades perfectly in five sizes: Large, medium and small flats, large and small peaberry.

Made in five sizes, and capacities from 6 to 30 bags per hour.

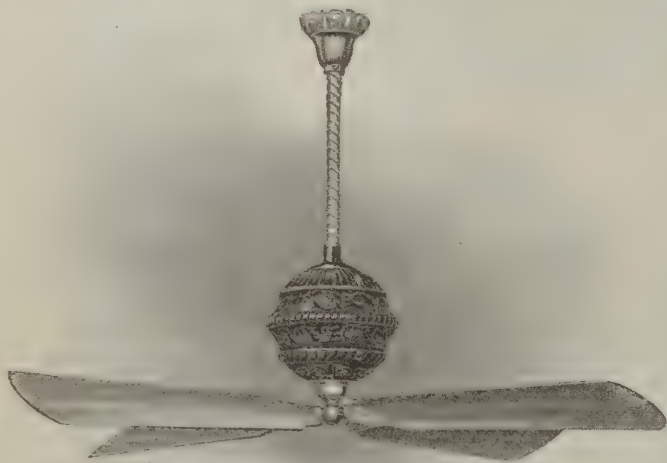
Monitor Rice Separators are used more extensively in the rice industry than any other make of machine.

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"The Standard"



"The Standard," Style "B," Without Switch.

Our Fans are used in all parts of the world. Our experience with foreign requirements enables us to meet all conditions, especially in respect to special insulation. Other strong points are artistic design, high finish, economy in operation and blade-carrying power.

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MANUFACTURERS OF

Shoes for Export

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Before a critical public a half century, the "Friedman Shoe" now, as ever, stands supreme.

OUR FACILITIES:

Two mammoth electrically equipped factories with a capacity of 10,000 pairs daily; over 100,000 square feet of sales and store rooms; a well-organized foreign department for our export trade exclusively; unexcelled warehouse and shipping capacity.



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Schroeder Rotary Washer?

It is the most perfect and successful Rotary Washer on the market. The tub is made of red Louisiana cypress, which will not fall apart. All castings are finished with rust-proof aluminum paint; all iron parts coming in contact with the clothes are heavily galvanized. We also make other washers. For particulars address

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THE BEST LIGHT

The Cheapest and Strongest Light on Earth.

Makes and burns its own gas. It is portable; hang or set it anywhere. Requires no pipes, wires or gas machine.

A Safe, Pure White, Powerful, Steady Light. Permitted by Fire Insurance Underwriters.

No wicks to trim; no smoke or smell. SUPERIOR TO ELECTRICITY OR ACETYLENE AND CHEAPER THAN KEROSENE.

Saving effected by its use quickly pays for it. Over one hundred styles of fixtures for indoor and outdoor use. This is the Pioneer Incandescent Vapor Gas Lamp. It is perfect. Beware of imitations.

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The BEST LIGHT CO.

73 E. 5th St., Canton, Ohio, U. S. A.

Cable Address: "BEST," Canton, Ohio.

Codes used: Liebers, A B C, 4th Ed., W. U. Tel. Co. and Our Own.

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LEADS THEM ALL,

So Our Testimonials Say.

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition and American Institute, New York City.

New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

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U. S. A.

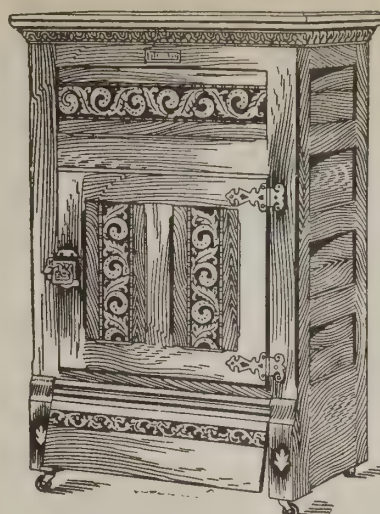
Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint**, manufactured by Harry Louderbough, proprietor of NEW JERSEY PAINT WORKS, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—its splendid condition.

A PAINT THAT PROTECTS.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD, Master Schooner "Florence Shay."



Single-Door Refrigerator.

23 in. long, 15 in. deep, 37 in. high; weight, when packed for export, 90 lbs.; measurement, 9½ cubic feet. Price, f. o. b. New York, \$4.50.

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Our plant, occupying twenty [20] acres of ground, is without question the largest and most complete in every detail of any similar works in the world.

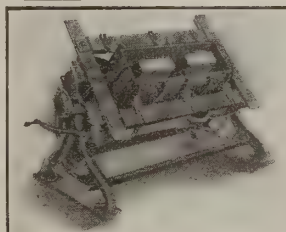
Over 400,000 Challenge Refrigerators sold and in use throughout the United States of America.

Our catalogue, illustrating and describing the various styles of Refrigerators made by us, mailed postpaid to any part of the world. Prices quoted f. o. b. cars at New York City. Orders received through export commission houses.

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Machine showing rocked position.

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MANUFACTURERS OF

The Winget Concrete Building Block Machine, Automatic, adjustable and rocking. To admit the facing of blocks. Combining ten machines in one, for the manufacture of concrete blocks for dwellings, factories, bridges, power plants, docks, retaining walls, tunnels, subways, silos, foundations, gutter blocks, wall copings, etc., etc.

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Guaranteed.

All Breaks Made Good.

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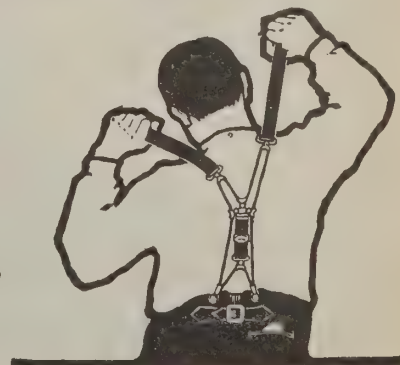
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Sample pair, 50c.



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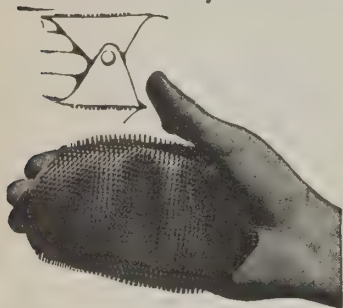
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Are Indispensable for Complexion Beautifiers.

If applied properly will remove

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BLACKHEADS and
WRINKLES.**

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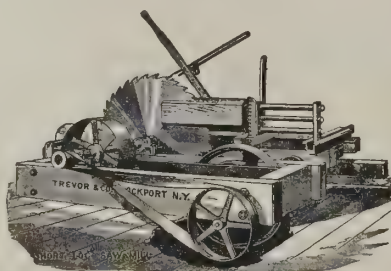
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**Machinery for
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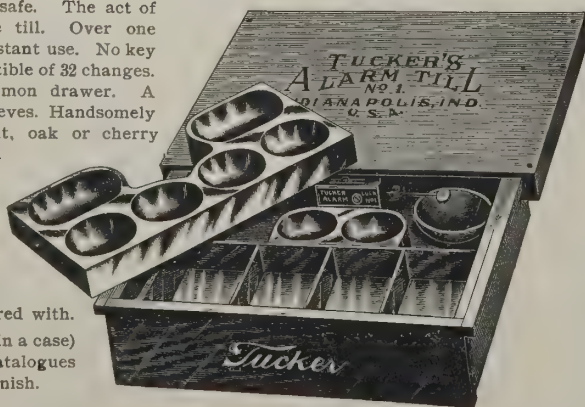
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A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

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Improved Rider Hot Air Pumping Engine.

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Improved Ericsson Hot Air Pumping Engine.

Built by us for more than 30 years, and sold in every country in the world. Exclusively intended for pumping water. May be run by any ignorant boy or woman. So well built that their durability is yet to be determined; engines which were sold 30 years ago being still in active service. Send stamp for Catalogue "Z" to nearest office.

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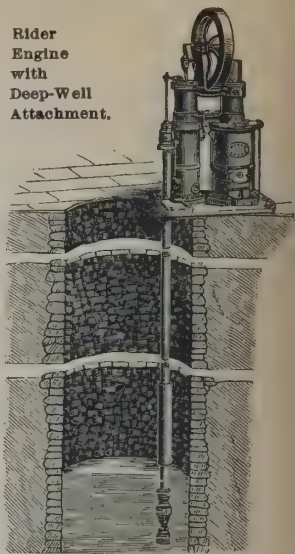
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CHAS. R. COWIE & CO., Agents, Rangoon, Burmah.

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Rider Engine with Deep-Well Attachment.



The OLDS Gas and Gasoline Engines.

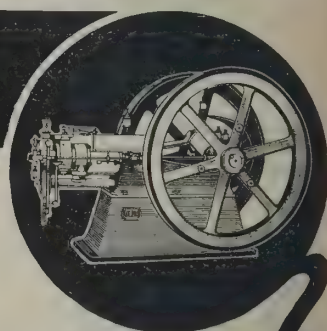
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WOODWARE SUPERSEDED BY THE INTRODUCTION OF THE
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Will wash fabrics, coarse or fine, as quickly and cleanly as any washing machine made, and being made of **Galvanized Steel** will outlive and outwear **ANY THREE** Wooden Washing Machines.

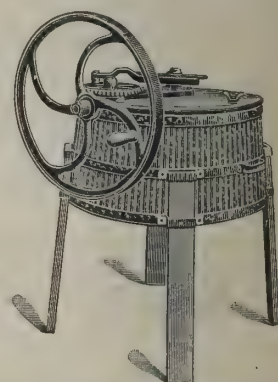
The galvanizing is performed after the machine is put together, thus preventing cracks, which would cause rust.

Being **absolutely germ-proof**, is the only perfect, sanitary washing machine in existence.

\$11.00 Upon receipt of Eleven Dollars, U. S. Gold (or its equivalent), we will crate, ready for steamer, and deliver f.o.b. cars at New York City, **\$11.00**

TWO (2) INTERNATIONAL (Galvanized Steel) WASHING MACHINES.
Each machine occupies six cubic feet. Weighs seventy-two pounds.

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There Are Two Kinds of Rubber Heels

Those That **SLIP** and the **FOSTER**

Foster Rubber Heels cost no more than the ordinary kind, yet the patent Friction Plug absolutely prevents slipping and makes the heel wear longer. At your shoeman's.

FOR SALE EVERYWHERE.

FOSTER RUBBER CO., Boston.



Dealers Supplied by

NASHUA TILL CO.

ESTABLISHED 1859

NASHUA, N. H.
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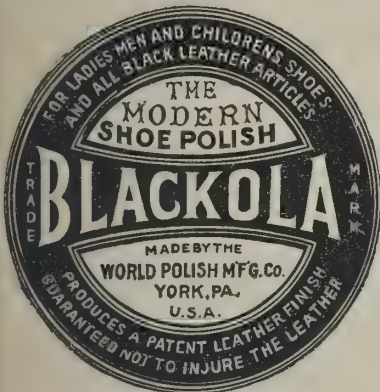
The drawer is made with Oak or Black Walnut Front, varnished and polished.

The sides, back and half-globe sliding coin cup of hard wood, finished in oil. The apartments made to accommodate the currency and coin of the country in which they are to be used. Size, 17x18 inches.

The Lock has 32 Combinations, which can be changed instantly, and CAN NOT be discovered by the feeling of the finger keys. This lock is safe, convenient and perfect. The Alarm does not sound except when an attempt is made to open the drawer by an unauthorized person. This drawer is the original automatic alarm cash till of America and is now in universal use by merchants in U. S. A.

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IN AMERICA.



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is the ONLY POLISH
that both
Oils and Polishes
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Different from every other Shoe Polish.

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STEEL AND WIRE BOX STRAPS.

Flat, Plain, Embossed or Twisted,
With or Without Nail Holes.

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LAMP AND HEATER COMPLETE.

\$27.00 per dozen.
Nickel-Plated, Highly Polished 60-Candle-power Lamp. This Lamp is furnished with patent lift attachment on chimney gallery and smokeless and odorless flame spreader, with fountain indicator of amount of oil in Lamp at all times.

A scientifically constructed device easily adjusted to any Gas Jet or Oil Lamp, doubling the candlepower of the light, at the same time giving immense volume of heat for warming and cooking purposes.

BOILS WATER IN 10 MINUTES; HEATS ROOMS IN 10 MINUTES.
Gives perfect ventilation and increased light and NO extra cost.
Entirely new; lasts forever; absolutely no dirt or odor.

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\$10.50 per dozen.

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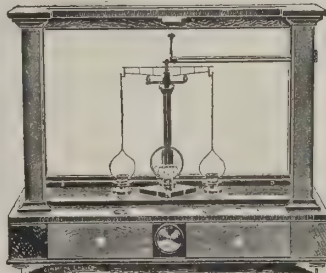
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Sensibility, 1-50 Milligram.

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Our Balances are the recognized standard for accuracy and excellence of workmanship.

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HAS NO EQUAL,

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Headquarters for ELECTRIC NOVELTIES.
WE ARE SELLING

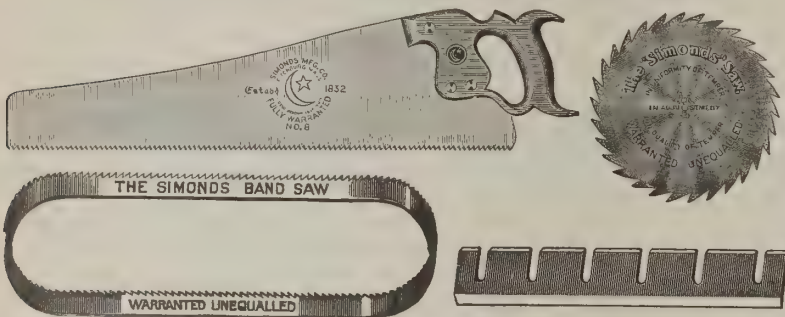
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PRINTED MATTER IN ALL LANGUAGES.

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Agents wanted. Send for New Catalogue. Cable Address: "Fletcher, Cleveland."

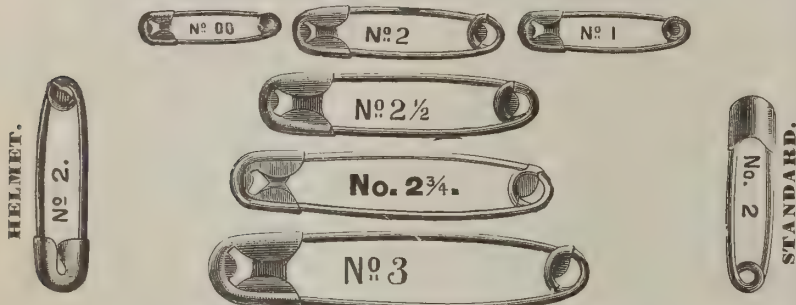
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HAVE THE MOST EFFECTIVE GUARD TO PREVENT CATCHING OR TEARING OF MATERIAL
MADE IN NICKEL-PLATE AND JET BLACK.
CONSOLIDATED SAFETY PIN CO.,
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Poultry Supplies.

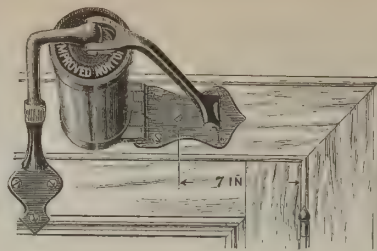
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MANUFACTURERS AND EXPORTERS
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IMPROVED

Norton Door Check and Spring.

Our regular checks are made in six sizes, to fit any size door; are either right or left hand and may be applied to either side of a door without change.

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Manufacturers and Exporters of

CANDO Silver Polish

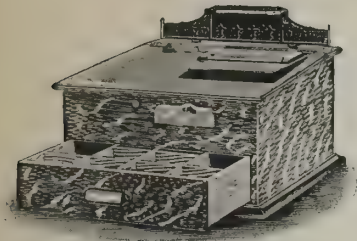
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No. 85.

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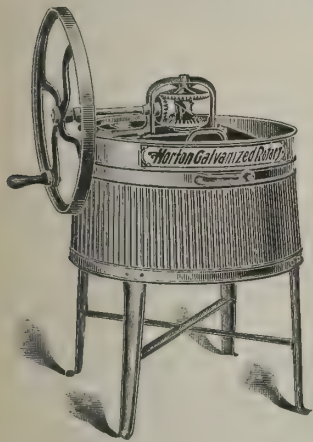
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Horton Galvanized Rotary Washer.



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Built of steel throughout, including the legs, and heavily galvanized after being constructed.
Lighter, stronger and more durable than wooden machines.
Will not rust or rot, and not affected by climatic changes.

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Each washer measures, crated 8 cubic feet.
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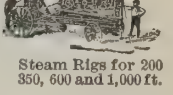
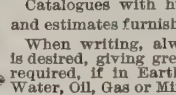
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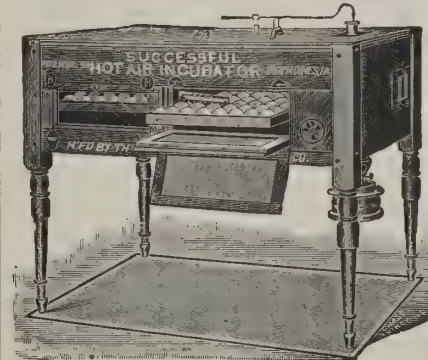
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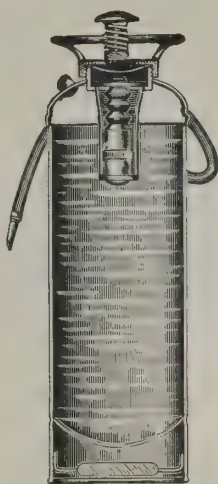
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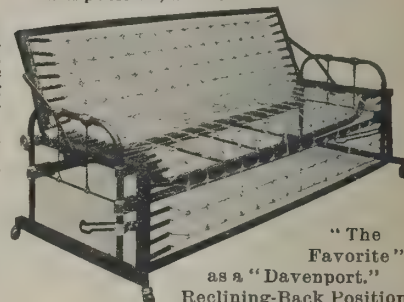
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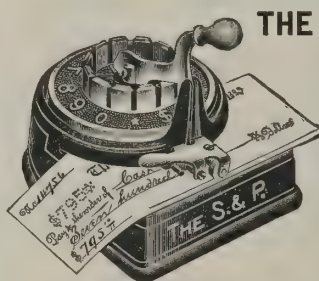
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15 dozen Chisels made of	3/4 inch Octagon Steel,
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15 " " " "	1/2 " " " " "
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5 " " " "	1/2 " " " " "
5 " " " "	1/2 " " " " "

This assortment will weigh approximately 550 lbs. The two
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should not be overlooked. It
may not appear again, so better
order now. If you send your
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better send a copy direct to us
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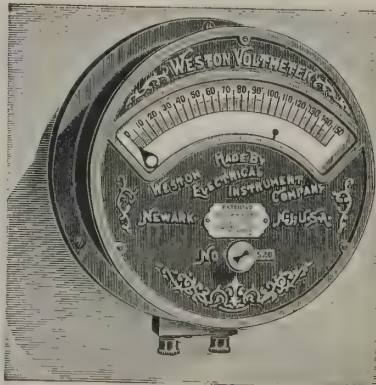
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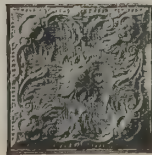
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We have made nothing but this Steel Wire Shelf Bracket during the past eleven years. We have learned how to make it, and are willing to sell it low. That is why our output is close on to 11,000 Brackets each day.

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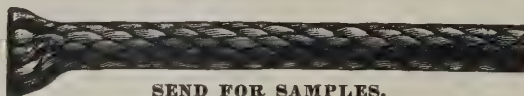
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SAMSON CORDAGE WORKS,

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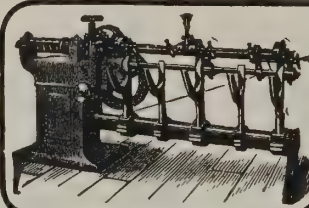
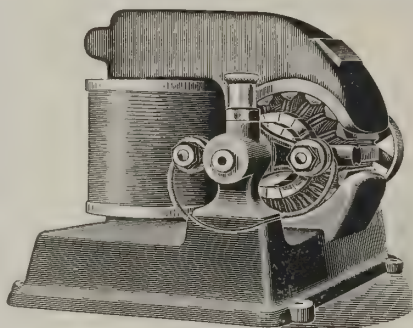
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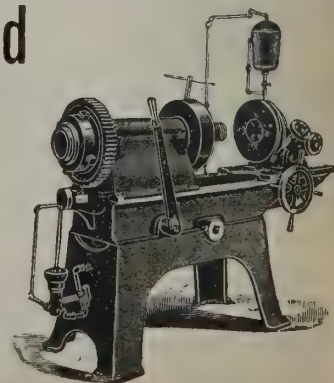
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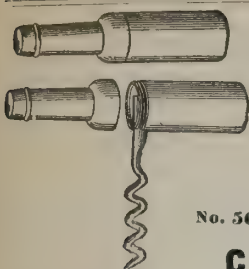
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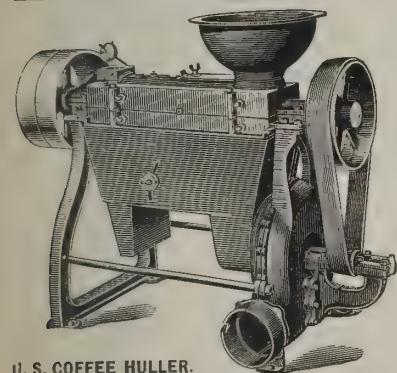


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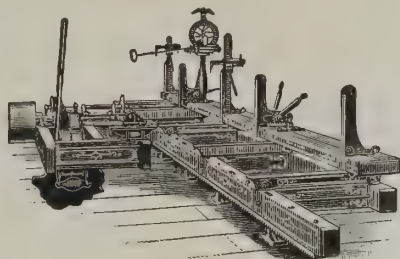
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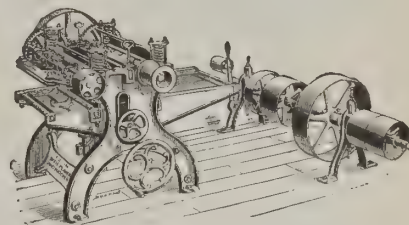


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Ten Spoons, packed 12 gross in case	\$1.00	£0.4.2	
Dessert Spoons, 6 " "	1.80	0.7.6	
Table Spoons, 11 " "	2.00	0.8.4	
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Child Sets (3 pieces), knife, fork, and spoon, packed each set in lined box, 144 boxes in case, per gross sets, \$8.00 £1.12.0

Tea Spoons, twelve gross, net weight 83 lbs., 36½ kilos; gross weight 90 lbs., 41¼ kilos.
Dessert Spoons, six gross, net weight 64 lbs., 32 kilos; gross weight 70 lbs., 35¼ kilos.
Table Spoons, six gross, net weight 90 lbs., 38¼ kilos; gross weight 97 lbs., 43¼ kilos.
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The O. K. is the KING of ROTARY WASHING MACHINES! Because:

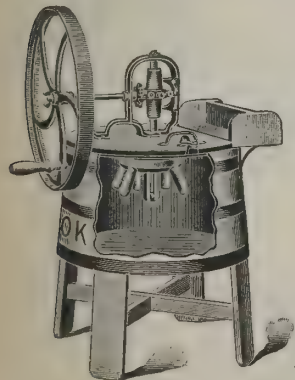
1. The O. K. is the only Rotary Washer that has Revolving Steel Ball Gearing, reducing the friction and thus making the machine so light running and almost noiseless.
2. The tub is made of Louisiana Red Cypress lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside of the tub, as are all of the castings.
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4. The O. K. Washer is made by experienced mechanics, and will outlast any other washer on the market.
5. The tub has a wringer box, fastened with steel brackets.
6. The lid on tub closes tight, no escape of steam.
7. Has gilded hoops, castings and name.

Prices quoted F. O. B. New York. Each O. K. Washing Machine, crated, ready for transportation abroad, weighs about ninety (90) pounds, and occupies nine (9) cubic feet.

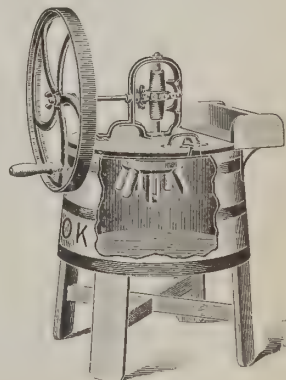
Manufactured Exclusively by

H. F. BRAMMER MFG. CO.,

DAVENPORT IOWA U. S. A.



O. K. WASHER.



O. K. WASHER.

GOULD'S STEAM AND WATER PACKING.

Patented June 1, 1880.—The Original Ring Packing.

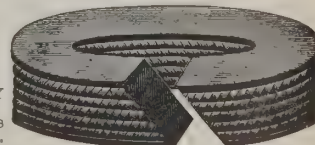
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Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED. N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

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ORIGINAL RING PACKING.



ALBION CHIPMAN, TREAS.

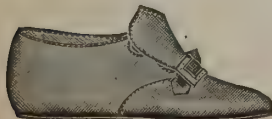
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SIZES 0 to 4.

Infants' Fine Soft-Sole Shoes.

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Stamped Steel Ceilings and Side Walls

**Great Varieties of
Handsome Designs.**

We also manufacture Tin Plates, Black and Galvanized Sheets, Metal Shingles and Lath and all other Sheet Metal building materials.

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The B. B. Reclining Chair,

In which to Read, Rest, Sleep, Write, Study, Sew or Smoke.

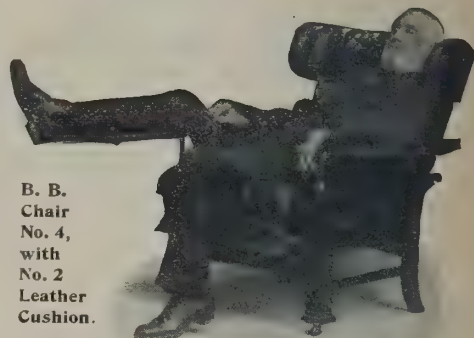
Adaptable to Your Different Inclinations of Mind or Body.

The Chair here shown is that known as our B. B. No. 4. It is made in weathered oak finish and is leather covered.

Upon receipt of **twenty-five dollars and fifty cents** in U. S. gold, or its equivalent, we will crate ready for steamer and deliver f. o. b. cars at New York City, **One No. 4 B. B. Adjustable Chair**, made from quartered-sawed oak, finished in either Golden, Weathered or Flemish.

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B. B.
Chair
No. 4,
with
No. 2
Leather
Cushion.

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For 5-8 inch
Bolts.

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MANUFACTURERS OF

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OUR ALUMINUM COMBS are properly made, with thoroughly rounded, tapered and polished teeth, and are unsurpassed for UTILITY, BEAUTY, CLEANLINESS and DURABILITY, NON-TARNISHABLE and SANITARY. Our Combs are made from PURE NICKEL-ALUMINUM, and NOT from cheap alloys, some of which are now on the market.

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THE SANITARY COFFEE MAKER.

GOOD COFFEE WITHOUT EGGS OR SACK.

Made of pure finely perforated aluminum.

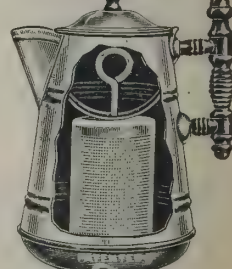
Will not taint or tarnish. Will fit any Coffee Pot. The quickest seller of any Household Article upon the market, and should be in every house throughout the civilized globe.

FOR EXPORTATION ONLY. Upon receipt of Thirty-seven and 50-100 Dollars (\$37.50) in U. S. gold, or its equivalent, we will box ready for steamer and deliver F. O. B. cars New York, one hundred (100) **SANITARY COFFEE MAKERS** as follows: Fifty Style No. 2, capacity seven cups of coffee. Fifty Style No. 3, capacity fifteen cups of coffee. Style No. 2 retails in the U. S. at fifty cents each; Style No. 3 at seventy-five cents each. Size of box containing one hundred Sanitary Coffee Makers, 24x23x35 inches, weight fifty pounds. Each Sanitary Coffee Maker is packed in an individual paper box, suitable for mailing. The Sanitary Coffee Maker will fit any coffee pot. We also make large sizes of the Sanitary Coffee Maker (two to fifteen gallons capacity) for hotels, clubs and restaurants.

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OVER HALF A MILLION IN USE
THROUGHOUT THE U. S. A.

PAT'D 1902



Sanitary Coffee Maker
within Coffee Pot.



N. B.—The steel used exclusively in these Clamps is of a special high grade, testing more than double the strength of Bessemer steel for clamping purposes.

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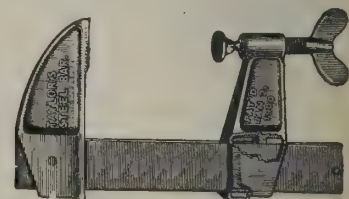
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MANUFACTURER AND EXPORTER OF

**THE TAYLOR QUICK-ADJUSTING
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Screw Clamps

JAMES L. TAYLOR,
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Correspondence solicited.
Catalogue No. 5A on application.

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A WORLD-RENOUNDED REMEDY

For Coughs, Colds, Bronchitis, Asthma, Catarrh, the Hacking Cough in Consumption, and numerous affections of the Throat, giving Immediate Relief. They have received the sanction of physicians generally and testimonials from eminent men throughout the world. All dealers in medicines and proprietary goods can recommend them with confidence. Caution.—"Brown's Bronchial Troches" are sold only in boxes or bottles, with Facsimile of the proprietors on outside wrapper of the package.

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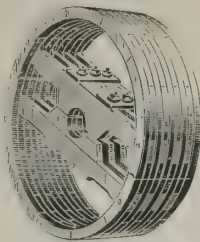
Manufacturers and Exporters of Harrison's Pain Curer—an Instant Reliever. Also Manufacturers of Infant Syrup—the Nurse's Treasure; Nervina—the Nerve Strengthening; Malaria Specific—cures La Grippe and Malaria; Special Antidote—for Kidney Complaints; Soothing Balm—for Coughs, Croup and Asthma; Magnetic Healer—Skin Beautifier and Healer; Herbal Discovery—Great Blood Purifier, and all kinds of Cooking and Medicinal Extracts for family use. Orders filled through commission houses. Correspondence solicited. Catalogue H on application.

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FORT WAYNE, INDIANA, U. S. A.



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H. F. Mayer, Prop.,

14 Perry Street, Buffalo, N. Y., U. S. A.



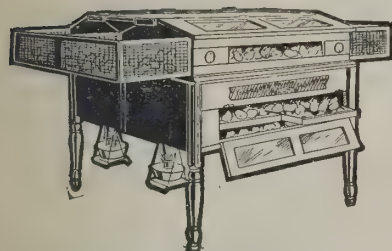
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Manufacturer of
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Elevating Machinery.

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OUT-HATCHES ITS COMPETITORS!



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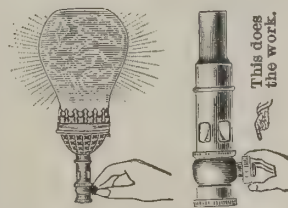
have trays so constructed that it's easy to reach either eggs or chicks. Remember, too, that the Reliable out-hatches its competitors so often because the heat in corner or center is always the same temperature—a mellow, even heat in every cubic inch of the egg chamber. Our new catalogue is free. It tells a lively story giving warnings, and simple, yet full instructions on hatching and raising poultry successfully. Just send 10 cents to pay postage

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Never Blackens Mantles.

Incandescent Burners, as generally constructed, give much annoyance and trouble always to get the exact mixture of gas and air to make the most effective combustion, but with "Suvlight," by the simple movement of the thumb, the exact proportion of gas and air and the highest possible illumination are instantly obtained. Adapted for all kinds of lamps, mantles and any variation of gas pressure. It is the long-felt want in private and business houses. Write for lowest export prices.



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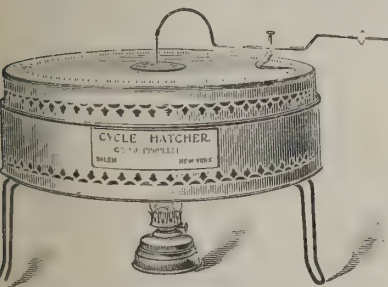
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A HATCHING WONDER

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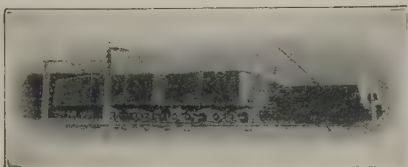
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Chains,
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Coal-Mining
Machines,
Coal and Rock Drills,
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Storage Battery
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Just the Thing for the Kitchen.

PAUL KITCHEN CABINET No. 50

has hardwood frame and legs, oak finish, whitewood top, 26x47 inches; height, 29 inches; has 2 sliding flour bins, with 2-ply veneer bottoms, one partitioned for cornmeal, graham flour, sugar or salt; 2 drawers; 1 bread and 1 meat board.

\$29.50—Six Kitchen Cabinets as shown

Delivered k. d., f. o. b. New York, Boston or Baltimore. Each cabinet weighs 90 lbs. Packed 2 to crate. Size, 4 ft. x 8 ft. x 2 1/2 ft., or 30 cu. ft.; this is for 2 cabinets packed together. 2 cabinets weigh, packed, 210 lbs.



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Kitchen Cabinet
No. 50.

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STOP THIEF!

NO MORE STOLEN GAS
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The Columbus Meter Seal insures absolute protection.

Impossible to tamper with the meter without breaking the seal—then the jig is up. Write for particulars.

COLUMBUS METER SEAL COMPANY,
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333 East Fulton St., Lancaster, Pa., U. S. A.

Manufacturers of

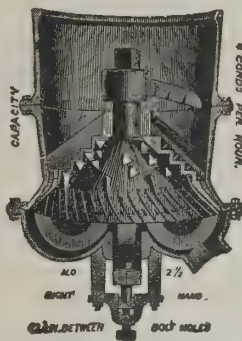
Bark Mills and Tannery Machinery

Including the Celebrated "EUREKA" Bark Mill

It grinds uniformly on wet and dry bark. It does more work with given power and less repairs than any other mill. Accurate and simple. Cannot get out of order. Entirely satisfactory.

Centrifugal Pumps, Tannery Boilers, Steam
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THE IDEAL CLIP

will hold more papers than any clip
of its size on the market. It has

NO UNPROTECTED POINTS.

Instantly applied—observe the cut—there are FOUR impinging points, giving a firm and evenly distributed grip.

PRICES: 15c. per Box of 100.
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An entirely new article; not the kind that you have used for the past 20 years, but a gold ink that is equal to dry bronzing. Made only for Plated and Coated Stock. Nothing equal to it. A time and labor saver. Any printer can use it. The most brilliant Gold Ink ever made. Give it a trial and be convinced. Something that all printers have been looking for. Rich gold, pale gold and copper, \$3 per lb.; aluminum, \$4 per lb. Put up in 1-lb. tin cans. Liberal discounts for quantities.

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PRINTS BRIGHT GOLD.

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The Cady Tack Puller and
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Is as good and handy a tack hammer as can be made, and the best and handiest tack puller ever offered, all in one simple tool.

ALSO OTHER SPECIALTIES IN HOUSE FURNISHINGS.

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Railroad,
Ship, Street
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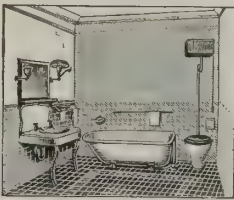
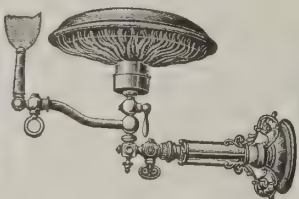
Heavy Tinware for Railroads,
Oil Cans of every description.
Locomotive Gauge Lights.

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"FERNO" Heating Disc & Cooking Stove

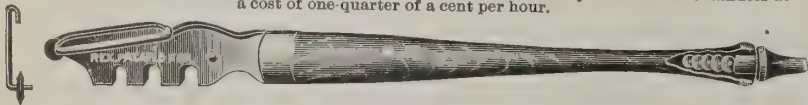


PARLOR HEATED WITH THE "FERNO"



BATHROOM HEATED WITH THE "FERNO"

A Unique, Compact and Ornamental Gas Furnace. Will heat an ordinary bedroom in 7 minutes at a cost of one-quarter of a cent per hour.



The "Rex" Magazine Glass Cutter with five extra cutters. Additional "Rex" Cutters when ordered will be supplied in package of one dozen each.

The Standard Stamping and Die Co., - Brooklyn, N. Y., U. S. A.



Quality Counts.

Merit Wins.

PECK'S HATCHETS and AXES.

All Hand Forged.
Fully Guaranteed.

PECK EDGE TOOL CO.,

Cohoes, N. Y., U. S. A.

Write for Catalogue and Prices.

There Is Only **ONE ALBANY GREASE**

This Trademark on every package.



Look out for Yellow Label.

ADAM COOK'S SONS,

And we are the only Makers.
Have you seen Albany Grease? How many know its worth?

Cost of using Oil.

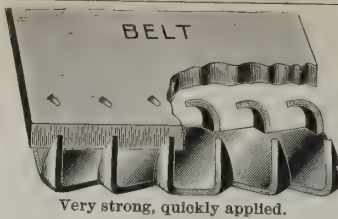
Cost of using Albany Grease.

Albany Grease is the only safe lubricant for electrical machinery of all kinds and is used by all the large plants and every street railway in the U. S. A. Self-acting. Where oil is used we can save you from $\frac{1}{4}$ to $\frac{1}{2}$ in the cost of lubrication. Oils are advancing and it will pay to use Albany Grease at the present prices. Small 4-oz. sample free on application.

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ACME STEEL BELT HOOKS.

Trial package No. 183, weighing 2 lbs., containing hooks for 100 inches of belt (2 m 60), assorted sizes, for belts from $\frac{1}{2}$ inch to 3 inches wide.

Net Price, at New York, 75 Cents.

Sold direct or through export houses.

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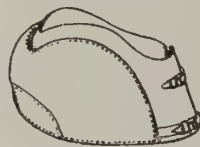


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Diagnostic Instruments, With COLD LAMPS.

Send for Catalogue A.

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MANUFACTURERS AND EXPORTERS OF

Star Pointer Knee Boot, 20th-Century Toe Weight,
Chehalis Hopple, Winkers, Fronts and Housings.

Orders Filled through Commission Houses. Correspondence
Solicited. Catalogue B on Application.

NEWARK, N. J.

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Rings that are Guaranteed to give wearer Satisfaction

MADE OF ROLLED-GOLD SEAMLESS WIRE.

In order to introduce our lines we are prepared to send an assortment of our samples, 48 styles of our rings for \$10.00, U. S. Currency, which will give an idea of the excellent quality of our manufacture. Catalogue and price list on application. Orders executed direct or through any export commission house.

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Established 1879

Palmer Gasoline Engines and Launches.

Over 9000 in Successful Operation.

PRICES FOR EXPORT ONLY:

1 $\frac{1}{2}$ H. P. Two-Cycle Marine Engine	\$ 75.00
3 " " " " " "	90.00
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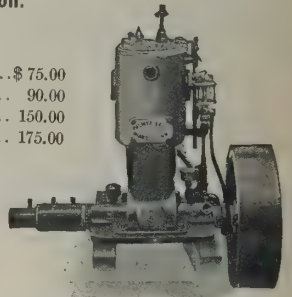
Four-Cycle Motors from 3 to 32 H. P. each.

Automobile Motors and Complete Launches.

Send for Catalogue.

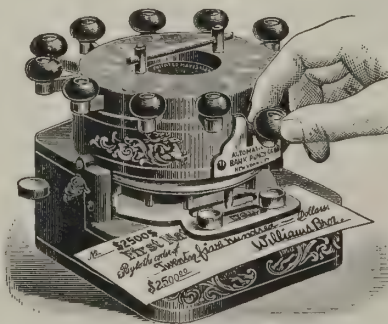
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COS COB, CONN., U. S. A.



Protection for Bank Checks!

A device that insures bank checks and drafts from being raised or altered appeals to all good business concerns—conservative as well as progressive.



The laws of nearly all countries make it incumbent upon those issuing checks to surround them with every obtainable protection.

The Ingersoll Automatic Check Punch cuts the marks and figures into the check and on account of their peculiar design, they cannot be successfully altered.

Guaranteed five years—lasts twenty.

Used and endorsed by leading banks and mercantile houses of the United States

Correspondence invited from houses
able to distribute in quantities.

Price, \$25.00

LIBERAL DISCOUNTS TO THE TRADE.

A. N. INGERSOLL, 46 CORTLANDT STREET,
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★ STAR CREAM SEPARATORS. ★

Over 250,000 in use.

More simple in construction, requires less labor and makes from 20 to 30 per cent. more butter than any other separator on the market.

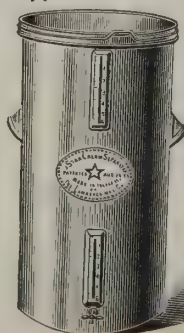
To introduce abroad.—We will, upon receipt of Twenty-four dollars and fifty cents (\$24.50) in U. S. gold, or its equivalent, make ready for steamer and deliver f. o. b. cars at New York City, one of each of our Star Cream Separators, seven in all, as follows:

No. 0. Capacity [1 cow] 24 quarts.
No. 1. Capacity [1 to 2 cows] 48 quarts.
No. 2. Capacity [3 to 4 cows] 88 quarts.
No. 3. Capacity [6 to 8 cows] 118 quarts.
No. 4. Capacity [8 to 10 cows] 180 quarts.
No. 5. Capacity [15 cows] 160 quarts.
No. 6. Capacity [20 cows] 200 quarts.

Weight of the seven Star
Cream Separators, boxed
for shipment, 140 lbs.

Orders received direct or through export houses. When ordering through the latter, please mail us duplicate of order, to avoid errors.

LAWRENCE MFG. CO., Toledo, U. S. A.

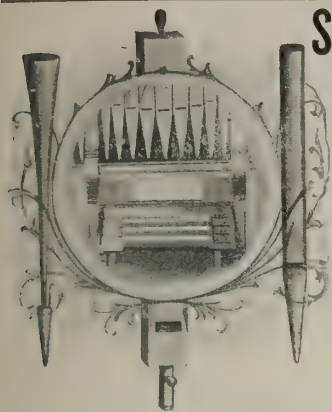




Noxall Natural Stone Water Filters.

Make all water, no matter how dirty, absolutely pure. Prevent typhoid and all zymotic diseases. Are small, compact, simple and inexpensive. All sizes and prices from \$2.50 up. For full particulars, terms, discounts, etc., write to

AMERICAN FILTER CO.
580 Montgomery Bldg., Milwaukee, U. S. A.



Samuel Pierce Organ Pipe Co.

Manufacturers and Exporters of

Metal and Wood Organ Pipes

AND ORGAN MATERIALS.

SPECIALTIES: Decorating Front, Pipes, Voicing Flue and Reed Pipes.

The Oldest Organ Pipe Manufacturers in the United States.

Correspondence solicited. Catalogue "D" on application.

SAMUEL PIERCE ORGAN PIPE CO.,
READING, MASS., U. S. A.

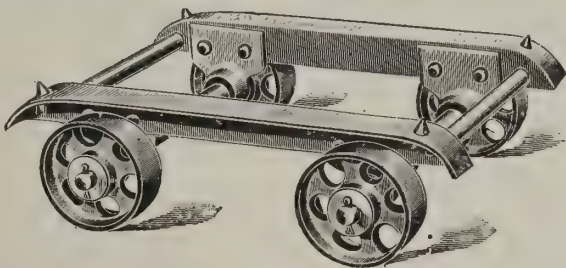
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Gem Box Truck

Made of Steel and Cast Iron.

Will carry a load of 2000 pounds. Weight only 44 pounds. Orders filled through commission houses.

Special Export Offer—Six trucks, packed for export and delivered f. o. b. cars New York, for \$36.00 net. Size of crate with six trucks, 20x26x4 inches; with one truck, 20x26x8 inches.



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Manufacturer and Exporter of

Lead Composition and Brass Pattern Letters and Figures

FOR FOUNDRY MEN AND PATTERN MAKERS.

Orders filled through commission houses. Correspondence solicited. Catalogue "B" on application.

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WANTED Agents to sell our Whale Art Embroidery Needles, which do elegant work on any woven goods, making beautiful raised figures of birds, animals, flowers and many useful articles to ornament the home. Any person can use it and do the work ten times faster than by hand. This is one of the easiest and most rapid money-making propositions in the market. Our agents are making rapid sales and big money wherever they offer the Needles. No experience is required to make a success. We furnish the outfit and full instructions with the first dozen Needles, so our agents are at once fully qualified to begin work and are assured of a handsome income. Send for a sample dozen Needles and terms on large quantities. We send sample dozen for \$2.70. Our \$3.00 White Rabbit Sofa Cushion and other samples of the work we furnish FREE to agents make it a pleasure to sell the Needles. **WHALE ART CO., 527 Bates St., St. Louis, Mo., U. S. A.**



200-Egg Incubator for \$12.80

The simplicity of the Stahl Incubators created a demand that forced the production to such great proportions it is now possible to offer a first-class 200-egg incubator for \$12.80. This new incubator is an enlargement of the famous

WOODEN HEN

recognized the most perfect small hatcher. This new incubator is thoroughly well made; is a marvel of simplicity, and so perfect in its working that it hatches every fertile egg. Write for anything you want to know about incubators. Send for the new free illustrated catalogue.

GEO. H. STAHL, Quincy, Ill., U. S. A.



C. E. MEADE,

Manufacturer and Exporter of

Babies' Soft-Sole Shoes.

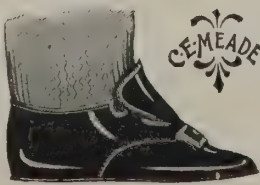
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And recommended by leading physicians in the United States and Europe.

Orders filled through commission houses.

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750 Lake Avenue, Rochester, N. Y., U. S. A.



T. B. Clark & Co., Inc.

Manufacturers of

RICH CUT GLASS

Honesdale, Pa., U. S. A.

The Glow Night Lamp.

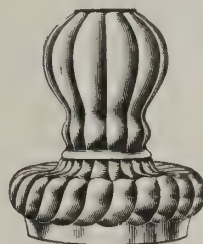
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200 HOURS' LIGHT FOR ONE CENT.

Makes and consumes its own gas, generated from kerosene oil. The only lamp using a glass burner.

Absolutely Safe and Free from Smoke or Odor.

Catalogue and Price List sent on application. Patented in the United States, Gt. Britain, France and Austria.



Style 1.



Style 2.

THE GLOW NIGHT LAMP CO., Incor., 73-75 PEARL ST., Boston, Mass. U.S.A.

NOTICE TO Foreign Commission Brokers and Correspondents.

We would like to communicate with reliable brokers with the view to securing their services to represent us in the sale of stock in a meritorious company.

Bank references on application.

Address all communications to the

DELAWARE OIL, GAS and DEVELOPMENT CO.,
Calvert Building, Baltimore, Md., U. S. A.

GOLD PENS—ALL SHAPES AND STYLES.

For Jobbers and FOUNTAIN PEN Manufacturers.

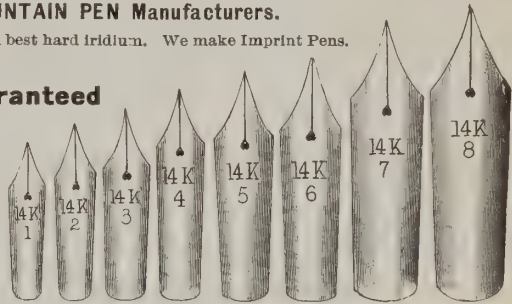
All Pens warranted 14kt. gold with best hard iridium. We make Imprint Pens. Imprints free on quantity orders.

Smooth Points Guaranteed

Full line Long and Short Nib Gold Pens. Send your name and let me quote you export price.

GEO. P. GAYDOUL,
17 John St., New York,
U. S. A.

Cable Address: "GOLDPENS."
Western Union Code used.



355 Eggs 354 Chicks

That's the result Mr. Geo. McDowell, Chemung Center, N. Y., obtained with an

IOWA ROUND INCUBATOR

The incubator that rounds out the largest number of chicks per hatch every time. If you are sure of your eggs you can rest assured of the same number of chicks—strong and healthy—with the Iowa Incubator. Catalogue and prices free on request.

Iowa Incubator Co., Box 140, Des Moines, Iowa



THE IOWA

O-HI-O COOKER & OIL STOVE CO.,

656-660 JEFFERSON AVENUE, TOLEDO, OHIO, U. S. A.

Good, Economical Cooking.

We can save you the services of a cook or make a good cook out of a poor one. Saves you 50 per cent. in fuel, labor and time. Insures you deliciously cooked, easily digested, never spoiled, steaming hot meals, all cooked over one burner.

GRAND FOR CANNING FRUIT.

Orders Promptly Filled Direct or Through N. Y. Commission Houses.

In latter case, send us duplicate order to avoid errors.

Agencies Wanted in All Trade Centers of the World.

We manufacture a full line of **OIL STOVES** that make a good seller in connection with cookers. Write for Catalogue and Discount.



\$3.50 up.



\$4.30 up.

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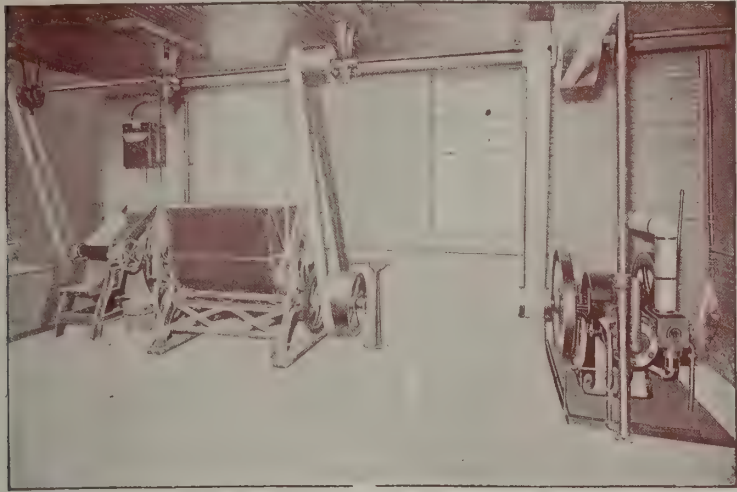
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THE JOHN C. COCHRAN CO.

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We illustrate herewith a Convenient Arrangement for the Baker's Workshop.

The machine at the left is our No. 2 Dough Brake, the next our 1½-barrel Dough Mixer, and on the extreme right our 7½-H. P. Gas Engine. The cost of this outfit, including pulleys, shafting and freight f. o. b. New York, boxed, is \$686.00 (£140).

The floor space is 18x6 feet.

Net weight of engine, 2568 pounds; gross weight, 3070 pounds; box dimensions, 46x66x45 inches.

Net weight of dough brake, 667 pounds; gross weight, 967 pounds; box dimensions, 31x48x50 inches.

Net weight of mixer, 1368 pounds; gross weight, 1675 pounds; box dimensions, 76x36x52 inches.

WRITE TO US FOR FULL PARTICULARS AND PRICES ON LARGER SIZES.

THE J. W. RUGER MFG. CO.,
BUFFALO, N. Y., U. S. A.

FRANK MILLER'S HARNESS OIL.

Preserves and softens the leather, thus adding life.

The highest quality of oil on the market.

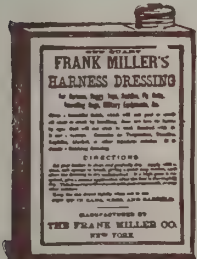


FRANK MILLER'S Harness Dressing.

Recognized as

"THE STANDARD."

Produces a brilliant jet-black gloss, which will not peel or smut, and to which dirt will not stick.



ESTABLISHED 1838.

The Frank Miller Co.

349 & 351 West 26th Street, New York,

U. S. A.

MANUFACTURERS OF

Blackings and Leather Dressings.

The goods mentioned are but a few of our many preparations for leather. Write to any New York Export Commission House for our Complete Price List and Samples.

**Our Preparations Are Uniform in Quality and
Always Give Perfect Satisfaction.**



FRANK MILLER'S

CROWN

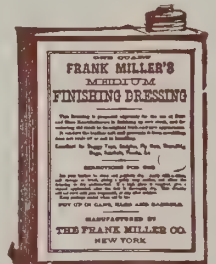
SHOE DRESSING.

For Ladies' and Children's Black Shoes. Produces a perfect finish, without injury to the finest leather. Each bottle in handsome carton.

FRANK MILLER'S MEDIUM Finishing Dressing.

For use of Boot and Shoe Manufacturers in finishing new stock, also for restoring old stock to its original fresh and new appearance.

Softens and Preserves.
Prevents Mould,
Does Not Scale Off.



The No. 7 Hardie Painting Machine

Does the work of twenty men with brushes,
and does it better.

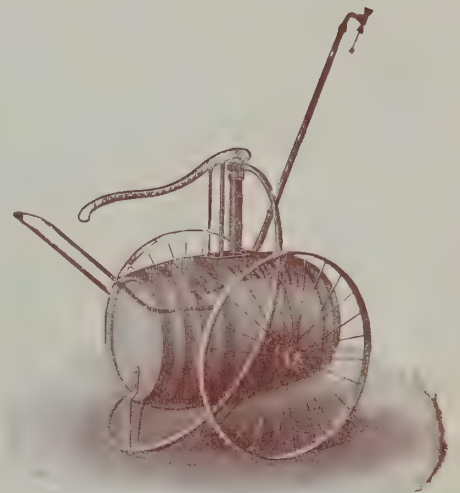
The No. 7 Hardie Painting Machine comprises a patented brass pump with brass ball valves, ingenious agitator and paint mixer, contained in a 30-gallon barrel, mounted on wrought-iron wheels, 26 inches in diameter, with 1½-inch tires, and is as easy to wheel as a baby carriage. It is equipped with 10 feet of high-grade ½-inch hose, long extension rod and special disgorging painting nozzle.

It will save its cost in a few hours' use.
Will spread any liquid of a sprayable nature.

SPECIAL OFFER FOR EXPORT ONLY:

Upon receipt of \$17.50, U. S. gold or its equivalent, we will box and deliver at New York City one No. 7 Hardie Painting Machine complete. Weight, 110 lbs. Packed in two cases—one, 9 cubic feet; one, 7 cubic feet.

We refer to 30,000 satisfied users of our machines.



The "Stay-There" Ready-Mixed Cold Water Paint

is composed of minerals ground in a liquid chemical, to be thinned with water. Packed in tight, iron-hooped barrels. IT IS AS DURABLE AS OIL PAINT; will not chalk or peel off; is fireproof, waterproof, washable and sanitary.

Upon receipt of SIX DOLLARS we will deliver f. o. b. cars at New York City ONE HUNDRED GALLONS of WHITE "STAY-THERE" PASTE PAINT. Gross weight, 400 lbs.; barrel, 28x28x20½ inches.

Our 1904 Catalogue, illustrating and describing the largest line of Painting Machines for every purpose, and the "Stay-There" Paint, will be mailed free to any part of the world. We will open accounts with responsible importers furnishing American references. Orders accepted through New York commission houses.

THE HOOK-HARDIE COMPANY,

37-52 Hook Building,

HUDSON, MICHIGAN, U. S. A.

LOZIER

MARINE GAS ENGINES

Two-Cycle, 3 to 15 Horse-Power. Four-Cycle, 15 to 100 Horse-Power.

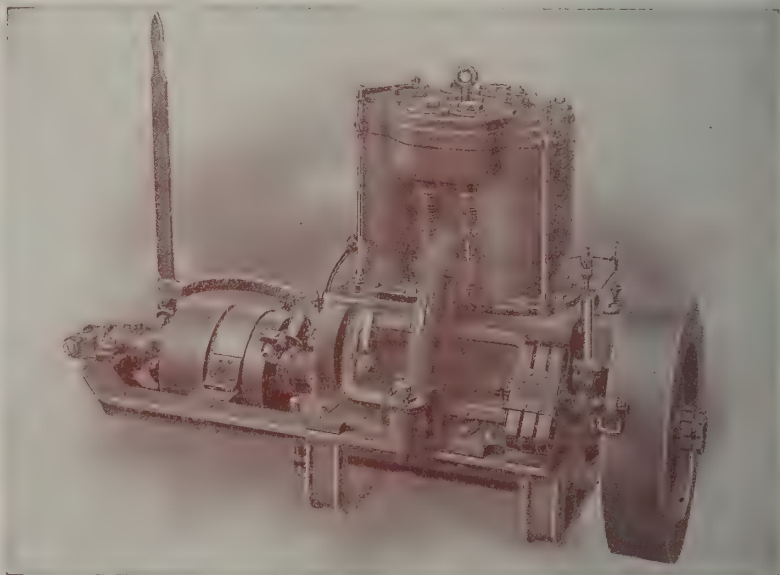
SIMPLE
IN DESIGN.
ECONOMICAL.
QUIET
AND POSITIVE
IN ACTION.
"AN IDEAL
GASOLINE
ENGINE."



Lozier 25-foot 5 H.-P. Launch.

We build Open, Half-Cabin or Full-Cabin Launches from 12 to 62 feet in length.

Accepted
as the Standard
and
Most Popular
Gasoline Engine
in the
United States of
America
and Now
Being Adopted
Throughout the
Entire
Civilized Globe.



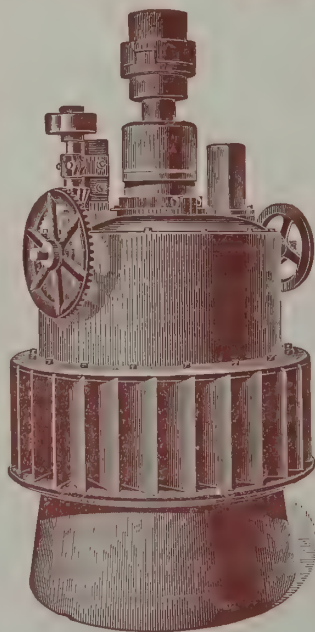
The Lozier 20-Horse-Power Four-Cycle Engine.

Our Catalogue, thoroughly describing and profusely illustrating our Engines, published in the English, Spanish, German, French, Italian, Swedish, Danish and Finnish languages, mailed postpaid to all parts of the world.

THE LOZIER MOTOR CO., 1 BROADWAY, NEW YORK, U. S. A.

Cable Address: "LOMOCO," New York.
Lieber, Western Union, A B C 4th and 5th, A1 and Private Codes.

The "New American" IS THE Turbine for Export. Why?



Strength, durability and interchangeable parts reduce repairs to a minimum.

Great power for the diameter.
Economy in use of water.

Vertical or Horizontal Installations
to meet requirements.

Our Catalogue, which will be mailed on request, furnishes detailed description.
We also manufacture Gas and Gasoline Engines, Paper and Pulp Mill Machinery, and a full line of Power Transmission Machinery.

**THE DAYTON GLOBE
IRON WORKS CO.,**
DAYTON, OHIO, U. S. A.

We Make the Largest Line of SAW MILL MACHINERY in the World.

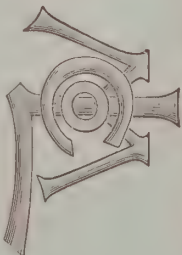
The Greatest Lumber Maker Is the Circular Mill.

THE BEST CIRCULAR IS THE

LANE'S PATENT LEVER SET.

HIGHEST AWARD—Gold Medal at the South Carolina Interstate and West Indian Exposition.

Adapted to all kinds, sizes and lengths of logs; any size from 3,000 feet up daily capacity; single or double, right or left hand.



No. 3 MILL.
With Center Guide for Steam Feed.
Can furnish with Heavy Friction Feed for Water Mills, also with Steel Trucks on Steel Axes extending across the Carriage and Steel Rolling Track, instead of Chairs and Rails and Center Guide, if preferred.
Right or Left Hand, Single or Double.

LANE MANUFACTURING CO.,
MONTPELIER, VERMONT, U. S. A.

We also manufacture Saw-Mill Set Works, Dogging Devices, Etc., Water Wheels, Log Jacks, Carriers and Nips, Live, Swing and Friction Feed Cutting-Off Saws, Live and Dead Rollers, Edgers, Trimmers, Cutting-Off Tables, Lath, Shingle and Clapboard Machines, Planers and Matchers, Transmission Machinery and the Anderson Patent Travelling Cranes.
Specify "LANE," and when ordering, to avoid errors, please mail us a duplicate of order.

The American Exporter

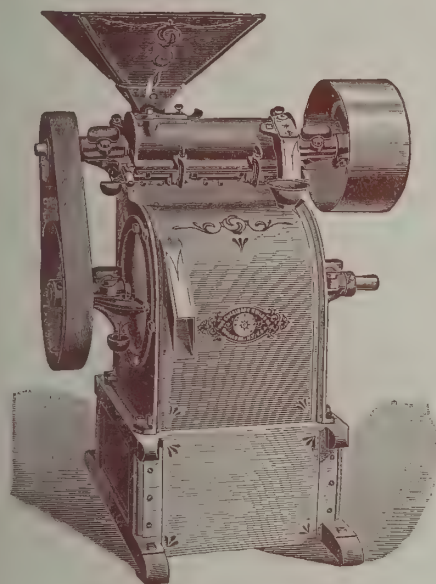
WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIII.

NEW YORK, MAY, 1904.

No. 6.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

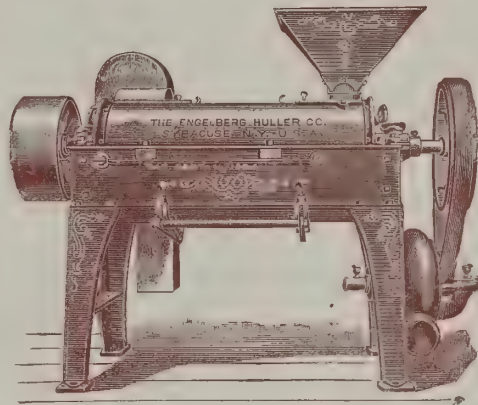


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

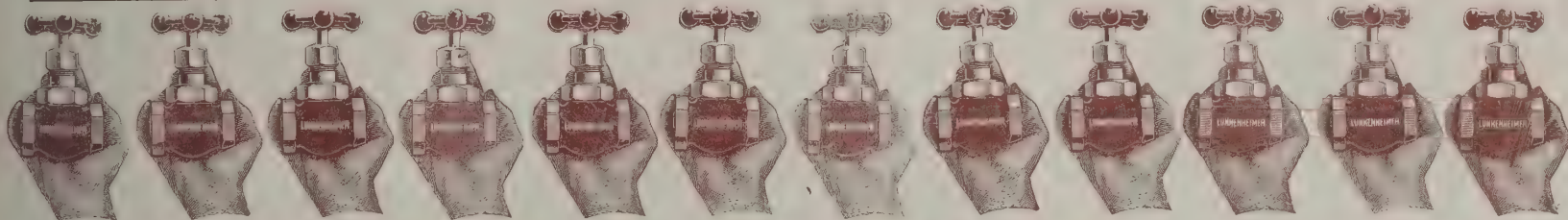
Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the Only machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.



Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

THE ENGELBERG HULLER COMPANY, P. O. Box B,
Syracuse, N. Y., U. S. A.
Export Office: 333 Produce Exchange, New York City.



LUNKENHEIMER REGRINDING VALVES

Made of Gun Metal are unsurpassed where thorough, reliable service is the first requisite. In screw and flange ends, for 200 and 350 pounds working pressure, from one-eighth inch up.

A trial order demonstrates their peculiar fitness and invariably results in their adoption. These valves are extensively used and in continuous service in the United States Navy, Locomotives, Lake and River Boats, High-Pressure Power Plants, Etc. All valves rigidly inspected and tested before shipment.

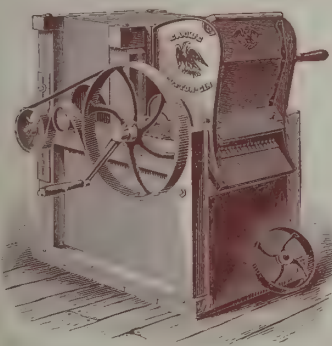
Specify LUNKENHEIMER Make and order from your export agent. Write for Catalog of Brass and Iron Steam Specialties and Engineering Appliances of superior quality.

THE LUNKENHEIMER CO., SOLE MAKERS, Cincinnati, O., U. S. A.
BRANCHES: New York, 26 Cortlandt St.; LONDON, 35 Great Dover St., S. E.

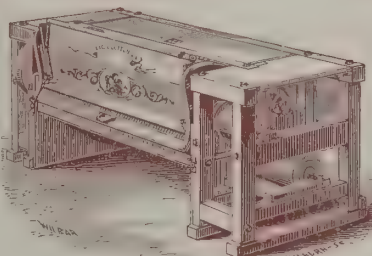
EAGLE COTTON GINS.

These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

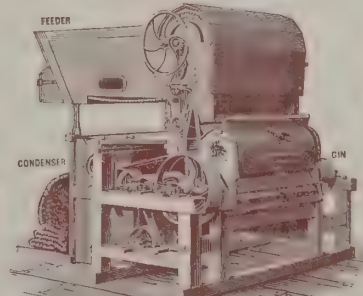
For further details illustrated Catalogues will be furnished on application.



Hand Gin.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

CONTINENTAL GIN CO., Inc., Successors to EAGLE COTTON GIN CO.,
BRIDGEWATER, MASS., U. S. A.

Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

BEWARE
OF
IMITATIONS



NOTICE
SCRIPT NAME
OF
ON LABEL,
AND GET
THE GENUINE
HARTSHORN

BEWARE
OF
IMITATIONS

Sold All Over the World. Order through your Commission Men.

STEWART HARTSHORN CO.

Office and Factory:

EAST NEWARK, NEW JERSEY, U. S. A.

Stockroom: No. 7 Lafayette Place, New York.

DIETZ Nos. 30 and 60 TUBULAR SEARCH LIGHTS.

These lamps are made for outdoor or indoor use. They give a powerful and brilliant light, and are not affected by the wind.

They are suitable for use in mills workshops, warehouses, stables and summer resorts, or in any other place where a good light is required which will not be affected by strong breezes.

Where it is desired to light up a long row of animals or a long, narrow room of any kind, these lamps are especially desirable.

No. 30 is fitted with our patent bull's-eye lens on perforated plate, adding to the appearance of the light.

No. 30 has a blizzard globe, 1-inch wick and a bright tin reflector 12 inches in diameter. Price, \$30.00 dozen.

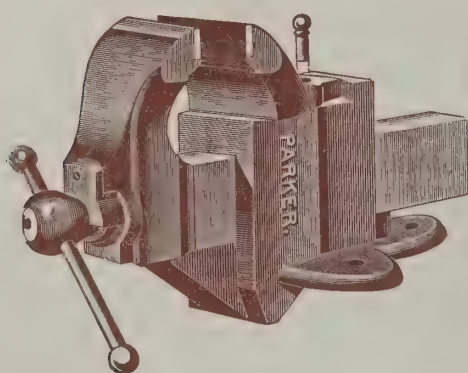
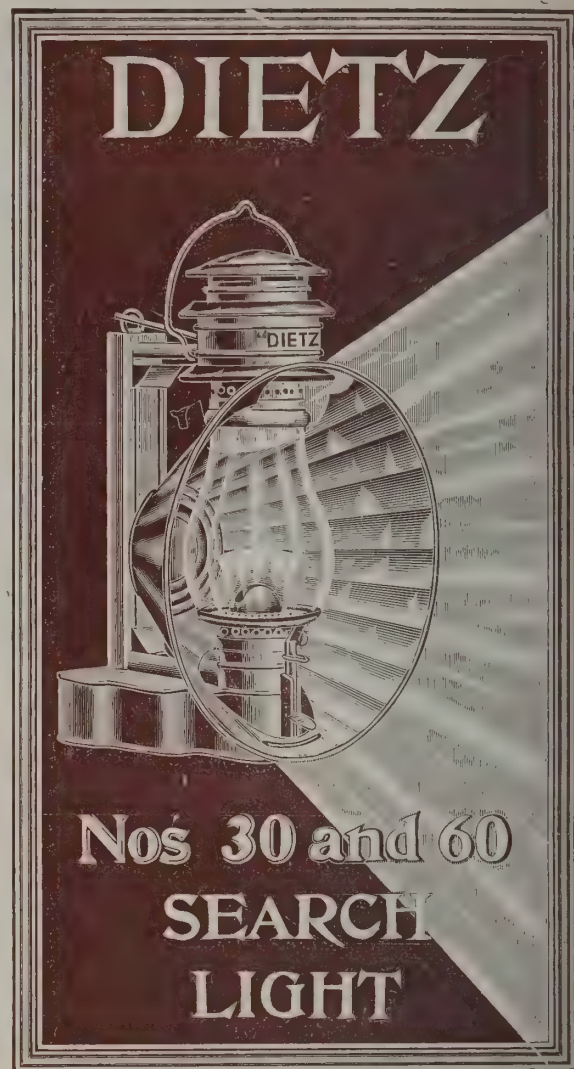
No. 60 has a No. 2 globe, 1 1/4-inch wick and a bright tin reflector 16 inches in diameter. Price, \$72.00 dozen.

We are pleased to send complete catalogues (Spanish or English) and price list to those interested.

R. E. DIETZ
COMPANY,

NEW YORK, U. S. A.

Established 1840.



THE Parker Vise

Unequaled for
Strength, Durability
and Finish.

Has stood the test of over
50 YEARS.

EVERY VISE MADE FOR
SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP
USED IN THE MANUFACTURE OF THESE GOODS.

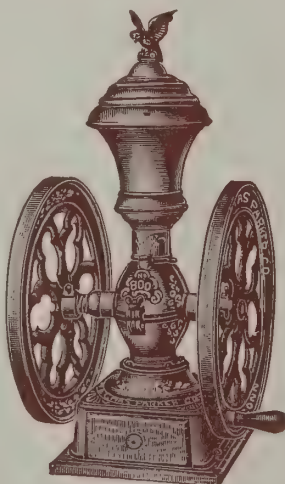
Have been in use for over 60 YEARS and will stand comparison with any Mill in the market.

We manufacture a line of
Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

Enquiries concerning our line will have prompt
attention. Catalogues on application.

THE
CHAS. PARKER CO.,
MERIDEN, CONN., U. S. A.

NEW YORK SALESROOM: 96 CHAMBERS STREET



ARCADE MANUFACTURING CO.

(INCORPORATED 1885).

MANUFACTURERS OF

"PHOENIX" Cork Pullers,

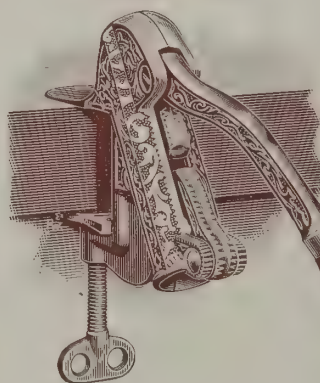
"Champion" and "Handy" Cork Pullers.

ALSO

"PERFECT" LEMON SQUEEZERS AND THE

"Crystal," "Imperial,"
"Jewel," "X-Ray," "Royal
Pound," "Telephone," "New
Home" and "Favorite"

COFFEE MILLS.



"Phoenix" Cork Puller No. 30,
Without Bottle Holder.

NEAT, SIMPLE, COMPACT.

"So simple any one can
operate them."

Can be fastened to Bar, Shelf,
Ice Box or Wall.

No. 30.—Especially adapted for family use. Sample Dozen, boxed ready for steamer, F. O. B. cars New York..... \$13 50
Size of box, 12x14x30 inches. Weight: gross, 70 pounds; net, 54 pounds.

No. 60.—With bottle holder, adapted for heavy work. Sample Dozen, boxed ready for steamer, F. O. B. cars New York..... \$25.00.
Size of box, 2x14x30 inches. Weight: gross, 75 pounds; net, 60 pounds.

Orders received through export houses. Please mail duplicate order to us.
Our illustrated catalogue sent postpaid.

ARCADE MANUFACTURING CO.,
Hardware Specialty Mfrs., FREEPORT, ILLINOIS, U. S. A.



GRAND RAPIDS DESK COMPANY,

Manufacturers of **HIGH-GRADE DESKS** OFFICE HOME **FOR EXPORT.**

ESTABLISHED 1880.

ESTABLISHED 1880.



Send for **Net Export Prices**, which include boxing and delivery F. O. B. New York.



OUR NEW ROLL-TOP DESK
No. 516.

PRICE, \$170.00

Our 100-Page Catalogue, illustrating and describing the many styles of **DESKS** made by us, mailed post-paid to all parts of the world.

NEW DESIGNS.**SUPERIOR WORKMANSHIP.****SUPERB APPEARANCE.**

Our New Line of Desks, for All Uses, Recently Placed Upon the Market, Embody the Results of Over 23 Years' Practical Experience in Actual Manufacturing.

GRAND RAPIDS DESK CO., MUSKEGON, MICH., U. S. A.

Double Engine Traction

In THREE Sizes:

20 H. P.	-	Weight, 9½ Tons
25 H. P.	-	Weight, 10½ Tons
30 H. P.	-	Weight, 11¼ Tons

Boxing for Export will increase weight 20 per cent.

Hauling Capacity, - 15 to 25 Tons,
BESIDES FUEL AND WATER.

These Engines Always Give
Maximum Power.

They use
Wood,
Coal or
Straw
for fuel.



Where the reduced speed of a single engine will stall it, the Double Engine walks right along.

Wheels (22 to 28 inch face) shown are for Threshing and Plowing Traction.

Special Wheels
for Freighting.

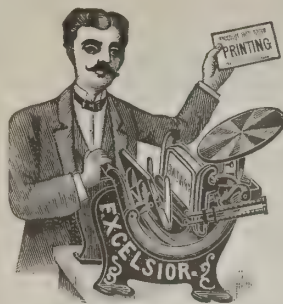
Boilers are of ample size. With indifferent fuel under severest stress will blow off.

Engines on "belt-brake" show easily 40 to 60 per cent. increase in power over above rating.

WATEROUS, Brantford, Canada.

Representatives Abroad:

WM. FLEMING,	Sydney, N. S. Wales
NEIL CURRIE,	Santiago, Chili
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CHEAP PRINTING.

Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **\$40.00.**

10x15-inch Press, with 10 styles of type, ink, etc., **\$125**, or with more type, rules, etc., for small periodical, **\$200.**

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A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, **\$200.** Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., **\$400**, outfit included.

CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, **\$12.00.**

Cylinder Press.

For newspaper and large announcements. Bed, 29x43 inches. Price, **\$500.** Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages, paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.

C. L. HAUTHAWAY & SONS,

346 Congress St., Boston, Mass.,
U. S. A.

Specialties.



Regular
4-oz. Bottle.

Best dressing put up and warranted in all respects.



Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

For polishing patent leather shoes quickly and without injury to the leather.



"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the

White Lily Washer.



WHITE LILY WASHER.
WASHES LILY WHITE.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is 2½ turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** (\$30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**

Weight, 600 lbs. Measurements: 18x24x24 inches.

WHITE LILY WASHER CO.,

MANUFACTURERS,
DAVENPORT, IOWA, U. S. A.

LOVELL MFG. CO.

Erie, Pa., U. S. A.

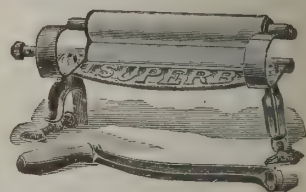
Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS, RAT and MOUSE TRAPS.



Send for
Catalogue
and
Prices.



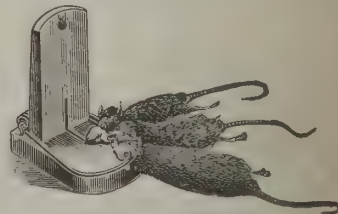
We make a full line of
CLOTHES WRINGERS
for the Export Trade



Delusion
Mouse Trap.

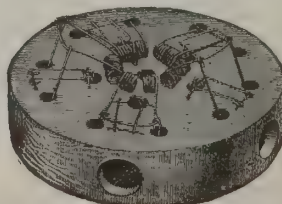


Rex Trap.
Made in two sizes:
large size for rats;
small size for mice.



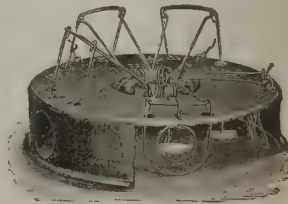
Erie Rat Trap.
Best Trap on Earth.

RAT TRAPS.—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch,"
MOUSE TRAPS.—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker,"
"Easy Setting Wood Choker," "Cyclone," "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of
Wringers
in English only
and of Rat
and Mouse
Traps in both
English and
Spanish.



Lovell's Easy-Setting Metallic Mouse Trap

BORN & CO.**Columbus, Ohio, U. S. A.****ONE OF A DOZEN**good reasons why
you should drink**Born's****XX PALE BEER**
is because it is
brewed from the
best materials.**A GOOD SPRING TONIC.**REYNOLDS
COLUMBUS, O.

We are prepared to ship in any quantity, and earnestly solicit your orders direct to our offices, or through any responsible export merchant. Satisfaction guaranteed.

BREWERS and EXPORTERS of**BORN'S CELEBRATED XX PALE and
MUENCHNER BEERS.**The Absolute Purity and Superior Flavor of Our Beers
Are Universally Acknowledged.

For Immediate Delivery We Make Introductory Offers as Follows:

OFFER No. 1.

3 doz. quarts Born's Muenchner, packed in barrel	\$10.00
3 " " " XX Pale " " " " }	net cash, F. O. B., N. Y.
5 doz. pints Born's Muenchner, packed in barrel	\$10.00
5 " " " XX Pale " " " " }	net cash, F. O. B., N. Y.

OFFER No. 2.

6 doz. quarts Born's XX Pale, or 6 doz. quarts Born's Muenchner, packed in barrels, \$10.00 net cash, F. O. B., N. Y.
10 doz. pints Born's XX Pale or 10 doz. pints Born's Muenchner, packed in barrels, \$10.00 net cash, F. O. B., N. Y.

OFFER No. 3.

One car lot (130 bbls.), \$9.00 per barrel, F. O. B., N. Y.

CONTINENTAL CAR AND EQUIPMENT CO.

FOREIGN DEPARTMENT:

Whitehall Building, Battery Place, New York, U. S. A.

Cable Address: "CONEQUICO," New York.

MANUFACTURERS OF

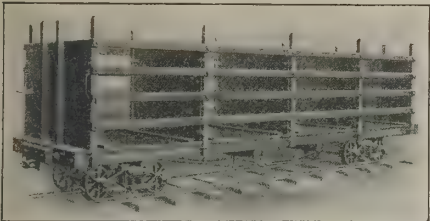
**Railway Freight, Plantation,
Industrial and Mining Cars.**We also make Special Cars for all purposes, from designs furnished, or will furnish our own designs upon request
FOR FOREIGN MARKETS.—Our Cars are taken apart and packed for shipment according to the best known methods.

Our Catalogue (English and Spanish), illustrating and describing the various styles of STANDARD CARS made by us, mailed postpaid.

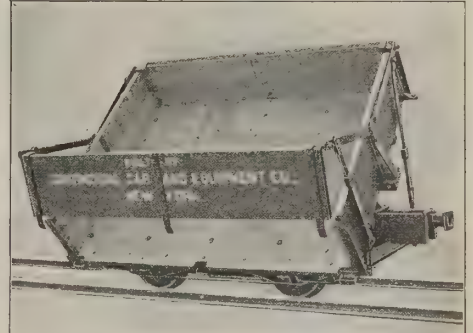
Please mention THE AMERICAN EXPORTER.



ALL-STEEL FLAT CAR.



CUBAN CANE CAR.



This cut shows our modern Dumping Car. It dumps on both sides of the track and is built strongly for hauling and dumping dirt, rock, sand, clay, ore, etc. Built in all capacities from 1 to 5 cubic metres.

**CELLULOID
ADVERTISING
NOVELTIES,
SIGNS,
BUTTONS,
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BADGES
&c.**

MEMORANDUM BOOK

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**BALTIMORE
BADGE & NOVELTY
COMPANY.**

BALTIMORE, MD., U.S.A.

INQUIRY OFFICE FOR NORWAY, SWEDEN
AND DENMARK.

COLLECTION OF CLAIMS.

ASK FOR TERMS.

HEFFERMEHL & CO.,ESTABLISHED
1895.**KRISTIANIA, NORWAY.****BARNEY COMPOUND VENTILATING WHEEL.**

For Removing Dust, Smoke, Steam, Heat, Foul Air, Gases. For Drying and Ventilation.

Branches in
France, Canada, Mexico.SOLE AGENTS IN SCANDINAVIA:
GOTHENBERG MACHINE CO., GÖTEBORG, SWEDEN.

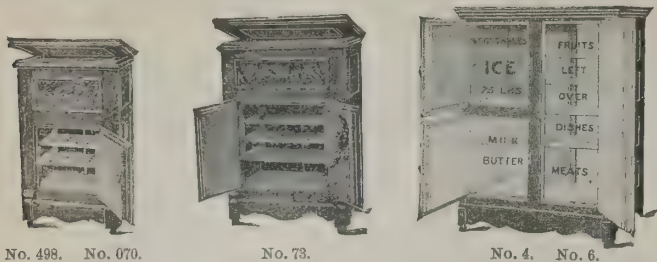
BARNEY VENTILATING FAN WORKS, Dept. E,

Boston, U. S. A.



The Leonard Cleanable Refrigerators

Freely Acknowledged to Be the Best in the World.
Made in Grand Rapids, Mich., U. S. A.



Single door, zinc lined.
No. 498—Size, 23x15x37\$5.25
No. 070—Size, 25x17x40 7.70

Double door, zinc lined.
No. 73—Size, 33x20x46 . . . \$13.10

Three doors, lined with real Porcelain on sheet steel.
No. 4—Size, 35x22x46\$22.75

Four doors, lined with real Porcelain.
No. 6—Size, 42x23x54\$33.95

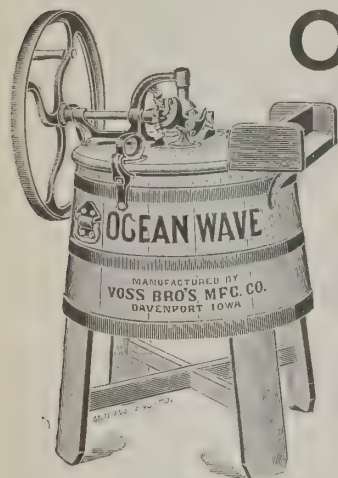
Orders received through any exporter in New York, Boston, Philadelphia or Baltimore, or through our own Export Office, 54 Warren Street, New York. E. L. D. Hester, Mgr.

Our Catalogue, illustrating and describing the various styles of Refrigerators made by us, mailed postpaid to all parts of the world.

Seven walls to save the ice. Airtight locks. Sliding, adjustable shelves, and many other improvements. Outside cases, ash with quarter-sawn oak panels, dark golden finish. Walls packed with mineral wool.

These prices F. O. B. New York, Boston, Philadelphia or Baltimore, crated for export. The sizes given are: first, width across the front; second, depth from front to back; third, height. All outside measurements in inches.

GRAND RAPIDS REFRIGERATOR CO., Grand Rapids, Michigan, U. S. A.



ONCE SOLD, THEY NEVER COME BACK.

OCEAN WAVE WASHERS

Wash the clothes as easily and cleanly as sea waves wash the beach.

OVER 100,000 NOW IN USE.

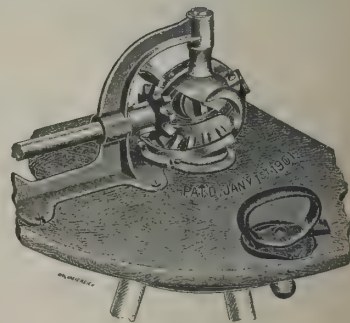
Shipping weight, 85 lbs.

Size, 2 x 2 x 3—12 cubic feet.

SPECIAL FEATURES.

Our Gearing: Simple in construction; impossible to throw out of gear; the longer it is used the easier it will run. Our Fly Wheel has no threads to strip; no nuts to lose, being attached or detached in a moment's time. Our Improved Dasher is hand-turned; clothes do not cling to it and tear. We assure free action of dasher by using heavy galvanized flanged ring in dasher block, thereby relieving all friction. In general construction of tub and finish, only best materials are used. We ship through any responsible New York exporter. All orders must be sent to us direct.

VOSS BROS. MFG. CO.,
DAVENPORT, IOWA, U. S. A.



THERE IS NO FRICTION.
NO LOST MOTION.

THE NEWARK LEATHER WASHER MFG. CO., NEWARK, N. J., U. S. A.

MANUFACTURERS AND EXPORTERS OF

Solid Sole Leather Washers.

Axle Washers for All Foreign and Domestic Axles.

All Kinds of Plumbers' and Special Washers.

Orders Filled Through Commission Houses.

Correspondence Solicited.

Catalogue B on Application.

There Are Two Kinds of Rubber Heels



Dealers Supplied by

Those That SLIP
and the FOSTER

Foster Rubber Heels cost no more than the ordinary kind, yet the patent Friction Plug absolutely prevents slipping and makes the heel wear longer. At your shoeman's.

FOR SALE EVERYWHERE.

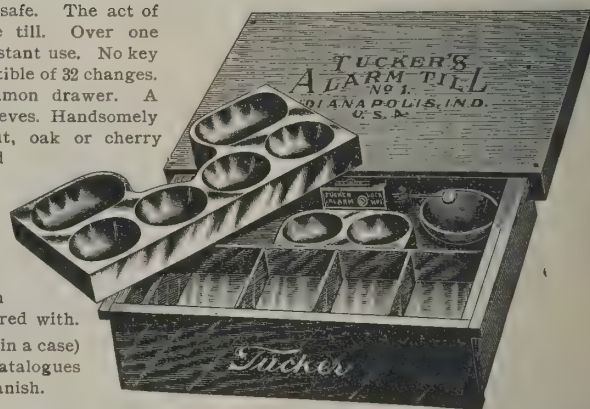
FOSTER RUBBER CO., Boston.

The Tucker Alarm Cash Till.

A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

As a piece of cabinet work, well worth its cost.

Sounds the alarm promptly if tampered with. Delivered (1/4 doz. in a case) free to vessel. Catalogues in English and Spanish.



TUCKER & DORSEY MFG. CO., Indianapolis, Ind., U. S. A.

Selling Agents: John H. Graham & Co., 113 Chambers St., New York City.



PAUL MFG. CO.

Manufacturers and Exporters of

CANDO Silver Polish

Best in the World for Cleaning and Polishing Gold, Silver, Cut Glass, Nickel and Plated Ware.

N. B.—CANDO is free from all injurious substances, being a rapid cleaner and brilliant polisher.

Orders Filled Through Commission Houses.

Correspondence Solicited. Circular C on Application.

BOSTON, MASS., U. S. A.

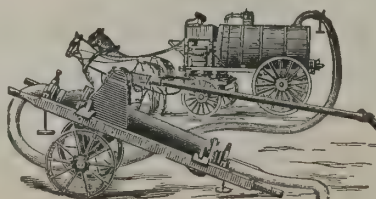
F. M. STARK, 111 Himrod Street, BROOKLYN, N. Y., U. S. A.



Manufacturer of **Fine Gold Pens.**

ALL SHAPES AND STYLES.

Correspondence solicited. Order direct or through commission houses.



The Odorless Excavating Co.

Manufacturers and Exporters of

ODORLESS PUMPS AND APPARATUS.

Orders Filled Through Commission Houses.

Correspondence Solicited. Boston, Mass., - - - U. S. A.

GOODS WELL DISPLAYED IS HALF THE BATTLE WON!!!

GRAND RAPIDS FIXTURES CO., MANUFACTURERS OF K.-D. (KNOCK-DOWN) SHOW CASES FOR EXPORT.

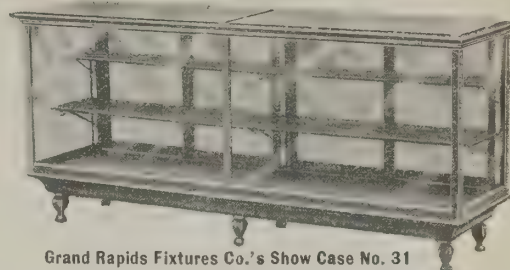
SHOW CASE No. 31 is Our Leader for Foreign Markets, and is just the thing for displaying Furnishing Goods, Chemists' Sundries, Dry Goods; in fact, is well adapted for the display of any line of goods.

SHOW CASE No. 31, "set up" (ready for use), is 8 feet long, 42 inches high, and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength. A sheet glass in front, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with two wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

SPECIAL EXPORT OFFER.

Upon receipt of \$42.00 in U. S. Gold (or its equivalent), we will box, ready for transportation abroad, and deliver F. O. B. New York City, one of our No. 31 Show Cases as shown. Net weight, 248 pounds; gross weight, 384 pounds. K.-D. for export measures 28 cubic feet.

Our Catalogue, illustrating and describing the various styles and sizes of K.-D. Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.



Grand Rapids Fixtures Co.'s Show Case No. 31

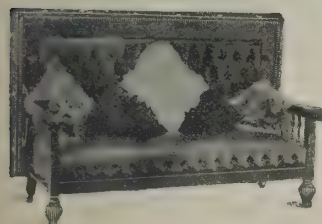
GRAND RAPIDS FIXTURES CO., GRAND RAPIDS, MICH., U. S. A.

BALKE MANUFACTURING CO.,

Patentees and Manufacturers of

Balke Combination Davenport, Billiard and Pool Tables, and Standard Tables.

INCORPORATED \$100,000.



Style "A," as a Davenport.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note—The prices here quoted, U. S. Gold or its equivalent, are for Foreign Markets Only, and include boxing ready for steamer, delivered f.o.b. cars at New York City.

Style "A," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

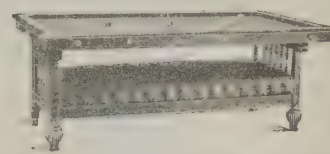
Style "A," converted into a Billiard or Pool Table, has a playing surface of 3½x7 feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, \$95.00. Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: 4'x8'x6'; 32'x36'x6'.

Standard Billiard Tables.

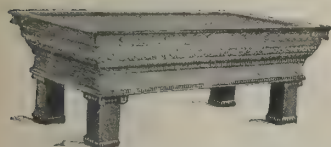
"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4x8 feet. Price complete, \$125.00. Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: 4'2"x8'2"x8'; 4'x8'2"x2'.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, 3½x7 feet. Price complete, \$90.00. Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: 4'x8'x8'; 3'6"x6'x2'.

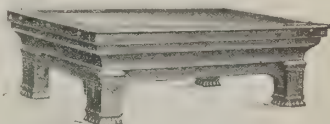
Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order. Our catalogue, illustrating and describing the various styles of Billiard and Pool Tables manufactured by us, mailed postpaid.



Style "A," converted into a Billiard Table.



Benedict Special Billiard Table.



"Den" Special Billiard Table

BALKE MANUFACTURING CO., Grand Rapids, Mich., U. S. A.

White Enamel Refrigerator Co.,

ST. PAUL, MINN., U. S. A.

Owners and Manufacturers of

Bohn's Patent Dry Air Syphon System of White Enameled Refrigerators.

The Bohn Dry Air Syphon System insures a low and uniform temperature, ranging from 38 to 48 degrees Fahrenheit. With our Enamel Lining, you need only to wipe the food compartments with a damp cloth to clean perfectly. The only absolutely sanitary refrigerator made.

Adopted and used exclusively by the Pullman Company for all of their Dining and Buffet Cars. Pennsylvania Lines, New York Central, Michigan Southern, Union Pacific, Canadian Pacific and all other railways throughout "the States" and Canada as well as by thousands of homes, hotels and clubs.

For Foreign Markets Only.

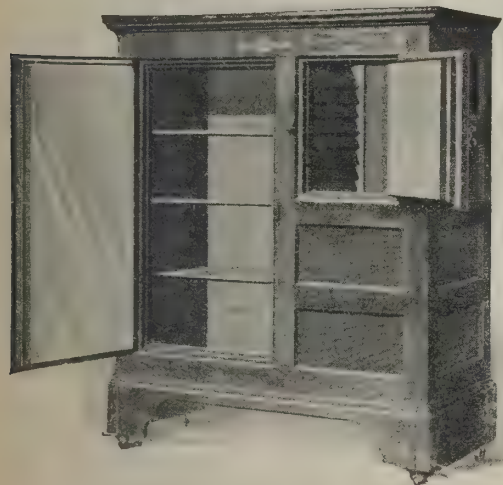
The prices here quoted includes boxing ready for transportation and delivered F. O. B. cars at New York City.

No. 2. Style "A," Panel Door. Price, \$23.00. Outside measurements (inches): Width, 38; depth, 21; height, 44. Weight, boxed, 278 pounds.

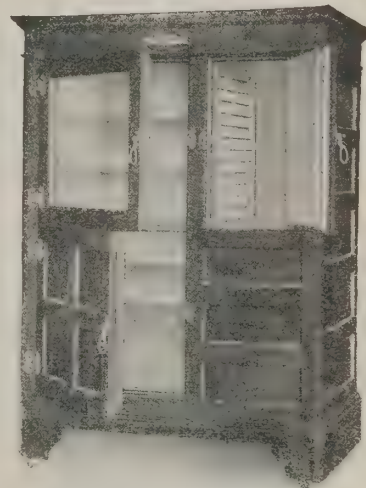
No. 5. Style "D," Upper Door Glass. Price, \$49.00. Outside measurements (inches): Width, 48; depth, 26; height, 66; weight, boxed, 540 pounds.

NOTE—Orders received direct, or through export commission houses. When ordering through the latter, to avoid errors, please mail us a duplicate of order.

Our forty-page catalogue, illustrating and describing the various styles of White Enamel Refrigerators made by us, mailed postpaid.



No. 2. Style "A," Panel Door.



No. 5. Style "D," Upper Door Glass.

MICHIGAN BARREL CO.,

Grand Rapids, Mich., U. S. A.

MANUFACTURERS OF

HIGH-GRADE REFRIGERATORS.

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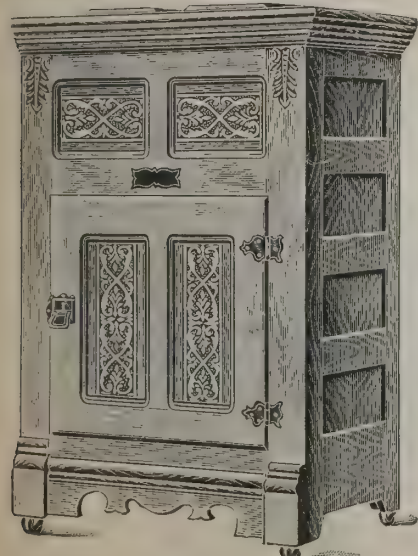
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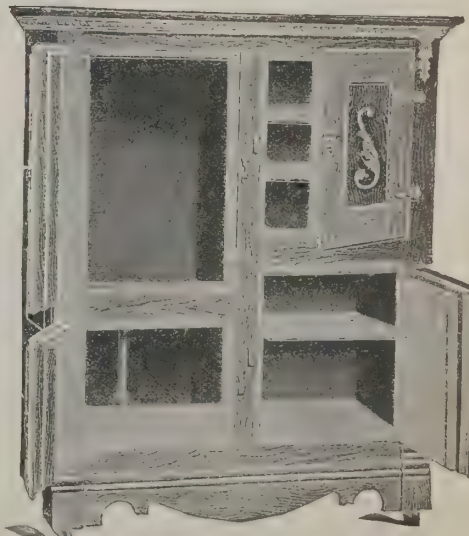
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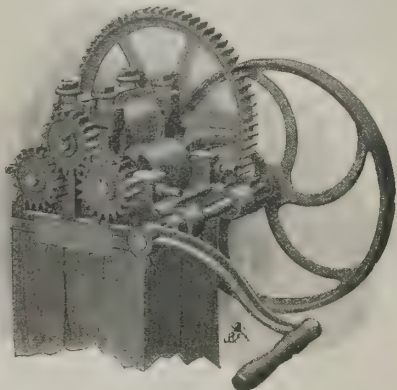
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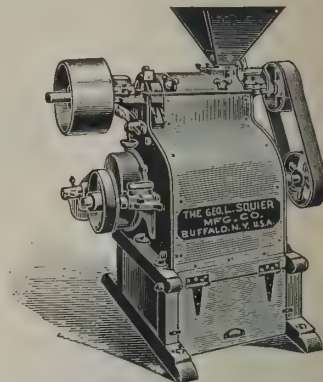
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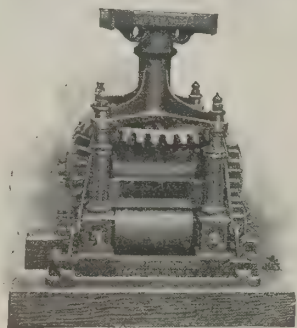
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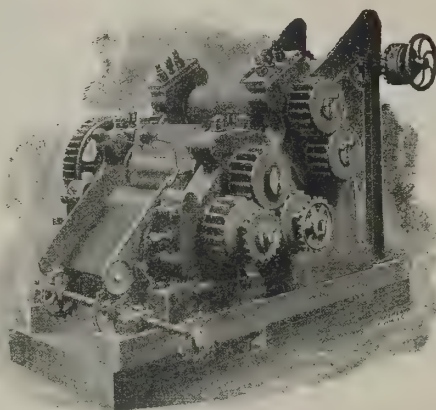


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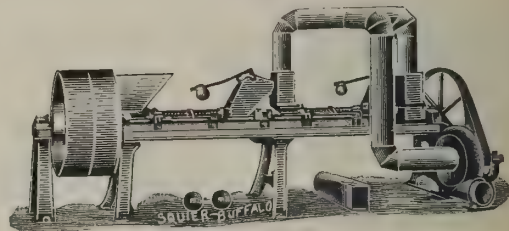
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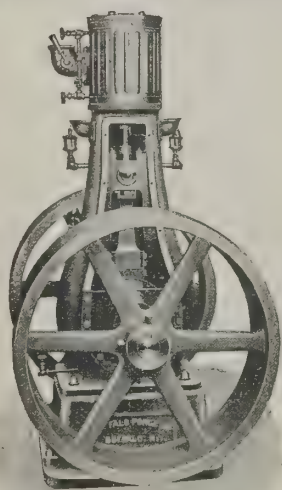
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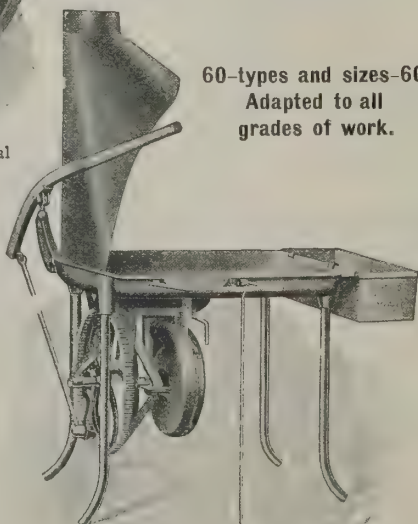
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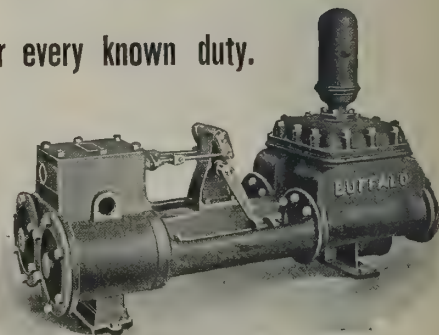
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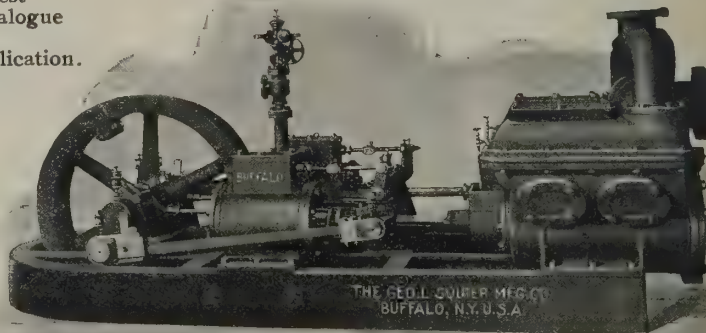


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THE AMERICAN MAIL AND EXPORT JOURNAL.

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CULTIVATION OF COTTON.

MANUFACTURERS of cotton plantation machinery are likely to benefit from the recent heartbreaking corner in that product, and American firms engaged in that branch of trade will do well to study the drift of foreign effort in that direction, for in this particular line American machinery has not been either equaled or excelled by any other nation's inventors. This is a point that should also be borne in mind by any of our readers who contemplate embarking in the cotton-growing industry. Aside from good machinery, a careful study of climate and other conditions is necessary, and we would advise quite as much care in that direction as we would suggest in the selection of machinery. It is a situation where our foreign friends and our American manufacturers can get together to the advantage of both parties to any transaction that may occur.

The chief essential in the growing of cotton is to secure a proper location, but after that the economy of operation and the consequent profits come chiefly from the use of improved mechanical methods of handling the commodity. In this direction American inventors have achieved distinct successes, and they have succeeded in simplifying the work to a degree that has greatly increased the legitimate profits of the growers in the cotton belt of the United States. We do not advise our readers to take up the industry unless they have or can obtain expert knowledge of it, for the recent cotton corner has caused so many to take up the idea that those who go into it are not likely to find such attractive prices or such great profits as would seem possible from recent market figures.

Americans in the cotton belt are going to take up the cultivation to a greater extent than ever before, but people who live in cotton-growing zones in other countries and operate intelligently with the best American methods have no good reason to hesitate about embarking in a business that will yield reasonable profit, if carried on under the guidance, or with the advice of competent persons, aided by the mechanical devices which American manufacturers can offer.

SULLY, the so-called American "cotton king"—we have no kings or queens in the United States—has been trying to extricate himself from the miserable predicament into which he has fallen through endeavoring to make a fortune at the expense of other people. Sully blames two or three alleged confederates, who he claims deserted him at a critical time, for his failure in business. Some of his creditors have been endeavoring to learn the truth of his story, but for the purposes of the welfare of trade generally the American public will be heartily pleased to have Sully and his associates relegated to the rear. Sully is one man in 80,000,000 of people. It is doubtful if there is another who would plan to ruin a great industry, affecting so many people here and elsewhere. The American public would prefer that a man of his kind be left out,

and that the population figures be made 79,999,999. Perhaps, after all, Sully was born on some isle that no nation owns, or would care to own.

WE have received a copy of the full report of the Mosely Commission, which came from Great Britain to the United States last year to study conditions in America. The report is a volume of 400 closely printed pages. We have heretofore had occasion to comment upon the conclusions of the commission, and there is little new in the detailed account of the investigation of our visitors which calls for further remarks. It is worth noting, however, that the commission "is of opinion that while in the past the belief in education has been the effect rather than the cause of American prosperity, yet during the last quarter of a century it has had a powerful and far-reaching influence, and that in the future it will become more and more the cause of industrial and commercial progress and of national well-being, and will materially affect the conditions hedging about commercial competition with Great Britain."

ANDREW CARNEGIE'S latest effort toward uplifting and relieving humanity has taken the form of a fund of \$5,000,000, which is intended to prevent heroes and their families from suffering through lack of appreciation by the beneficiaries of their deeds of valor. Medals are provided for, and more substantial provision is made for men or women who risk their lives, or for the dependents of heroes and heroines, in case the latter do not survive. Ordinary every-day acts of heroism are quickly forgotten, and it frequently happens that those who risk life and limb for others and sustain injury have to suffer through the thoughtlessness of others. Mr. Carnegie's fund is a wise provision against such instances.

AMERICA now has three cities containing populations of over 1,000,000 each and fourteen cities in the United States have more than 300,000 each. Of course, New York heads the list, with 3,716,139 inhabitants. Philadelphia and Chicago are the other two great cities, their populations being between one and two millions. The total population of the United States at present lacks very little of eighty millions, a gain of nearly four millions in three years, which is certainly evidence that the growth of the country's business interests is upon a substantial foundation, for the increase in population will naturally enlarge the demand made by consumers in the future.

FRANCE and Great Britain are both to be congratulated upon the successful negotiation of the Anglo-French colonial treaties. The treaties settle many points which might easily become sources of annoyance in the relations of the two countries, and the event can be called an important step in the direction of universal peace—at least it is so regarded in America.

AMERICAN steel is said to be regarded with favor by the Italian Navy Department. The steel manufacturers of Italy combined some time ago to raise prices on account of being unable to supply the demand in that country, and we understand that American manufacturers are invading what seems to be a promising field.

JAPAN'S trade with the United States, according to a report issued last month by the Department of Commerce, has been growing rapidly in recent years. Without going into figures, it appears that of the five principal countries with which Japan has commercial dealings, the United States has made greater gains than any of the others.

PHILIPPINE trade seems to keep pace with that of the United States and its other dependencies. In the last reported eight months the gain was \$6,000,000 over the corresponding previous period.

SIAM is one of the latest countries to appreciate the worth of American goods, and has invited bids from our manufacturers for furnishing large quantities of railroad equipment.

BIG NAVY—WAR DETESTED.

AMERICA now leads in new battleships, according to figures presented to the British Parliament by the Secretary of the Admiralty, who says that the total tonnage of battleships now building and projected is as follows: The United States, 209,180; Great Britain, 187,000; Russia, 125,270, and Germany, 103,976. The American program of naval increase is based upon the desire for peace that is a dominant element of our civilized life. We would rather spend the money in advancing the trade of the world, instead of creating an enormous establishment whose chief effective use would be one of destruction of property and life, but perhaps the money is being well spent. It is nevertheless a fact that the bulk of American people would prefer to see the money used in the interest of higher education, the uplifting of the masses, the rewarding of discoverers of important benefits to mankind and the general elevation of the human race without regard to locality or previous condition.

The best fighters in the United States are men who deplore physical fighting. The most progressive men are opposed to armed combats, but it is characteristic of the nation that while conflicts are to be avoided whenever possible, it is not proper to suffer personal loss or submit to indignities. The real American never "bluffs," to use a slang expression, and he seldom asserts himself in a manner which might be mistaken for "bluffing" until it becomes absolutely necessary. His aim is to avoid trouble, rather than to seek it. His desire is for "peace, with honor," as an American statesman once expressed it. But, above all, whatever he may do, the real American wants to put out into the world the best product that his mind and machinery can turn out. If warships, he wants to have his country at the top of the list, and if it is in manufactures, either for home use or for export purposes, he desires to send to his customers articles that cannot be excelled by his competitors anywhere in the world. And he generally succeeds, for he puts his whole life and existence enthusiastically into whatever he does toward making the world more prosperous, thinking perhaps less of himself personally than he does of others, because he knows that he will share the rewards which are sure to come from his efforts when intelligently directed.

QUESTION OF CREDITS.

ONE of the most interesting and important features of the trade between American merchants and their patrons in foreign lands is the question of credits and the adjustment of prices for products, particularly in cases where there may be some slight difference in the market valuations of the moneys of the respective nations of the seller and the purchaser. These inequalities are satisfactorily adjusted with hardly an exception in the ordinary course of settlements. As to the question of credits there will always be a wide divergence of opinions. It seems only natural that an agent should feel that he ought not to pay for a manufactured or other article until he has sold it. The agents or middlemen are more numerous than the manufacturers or other producers and their opinions, having more general circulation, are more readily accepted by the general public as being correct in principle and practical in operation. On the other side of the case the interests of the manufacturer must be considered. Why should he not be paid as soon as he has constructed a machine and has shipped it to its destination? The fact that the agent, the seller, has not yet realized upon the transaction does not alter the circumstance that the manufacturer has already paid for material and labor, except a modest margin of profit, the cost of making the article under consideration. In other words the manufacturer stands to gain only his small profit after expending very nearly as much money as he expects to receive eventually for the completed article, taking all the chances of entire loss through marine disasters or possible dishonesty. The latter seldom happens, but it is an element of risk that prudent American exporters are obliged to take into consideration.

No universal system of dealing with the question of credits in the export trade of American merchants has yet been adopted. Various plans have been suggested from time to time, but not one has yet been proposed that is applicable to our relations with all of the foreign

countries with which we do business, nor has any been discovered which is universally and satisfactorily applicable to more than one line of industry. This may seem remarkable to our foreign readers, unless they are dealing with several different countries in various lines of trade. Wise men have endeavored to formulate a system of credits that would be fair to American merchants and equally favorable to their foreign customers. In some branches of international commerce success has attended these efforts, but in others the result has not been so satisfactory.

There are some ideas in connection with the subject that we would like to impress upon our readers. American manufacturers of the present day do less business themselves upon credit than ever before in the history of the country. They buy for cash, or its equivalent, and they figure on doing a large business with a relatively small profit as to individual transactions. Credits to customers that would be unobjectionable in the domestic trade, by reason of the shortness of the maturing time, might work hardships in cases where the patron was weeks or months away from the exporter's establishment. With the small profits charged, in some cases the loss of interest would practically wipe out any profit at all on shipments. In American business life shrewd men are now aware that they cannot get something for nothing. They realize that if they get long credits from others they must pay for them somehow. In individual cases it does not require much inquiry to disclose that such is the case. In selling to customers in foreign countries American exporters give their patrons the advantage of our low and reasonable prices—based upon small profits—and expect in return that payments will be reasonably prompt. The credit element in American business methods, outside of monthly bills that are expected to be paid regularly and promptly, is passing into the background. It will not be many years before it will disappear entirely from the American wholesale business world. We are only interested in the subject to the extent of explaining the situation to our foreign readers in order to assure them that they are really benefiting by the trend of minimizing credits. They are getting better articles for less money than would be possible under the old system. After all, this is the test which American manufacturers are able to stand successfully; the best that is producible, with the price the lowest at which a living profit can be made. What more can the purchasers of American or other goods desire?

NEW ERA IN COAL MINING.

AMERICAN inventors have made such improvements in mining machinery that the old system of picks and blasting will soon be obsolete everywhere in America. Drills driven by compressed air or electricity now take the place of the picks in the hands of miners. Instead of blasting after drilling, there is a machine, operated by either air or electric power, which digs into and breaks up the loosened coal, loading it into the vehicles that take it to the hoisting shafts. Fewer miners are required, the production is greater, and the work is done under the improved conditions which exist in every field where American labor-saving machinery is used to its full advantage. In some of the American mines electricity is now the only motive force used, aside from the brain force used by the workers who direct the machines. In the famous Cripple Creek district electricity has already superseded all other kinds of power. In a recent article on the subject the *Engineering Magazine* makes this comment:

"Taking a comprehensive view of the influence that machinery brings to bear on the working of a mine, one is struck with the general idea of thoroughness of system and method that seems inseparable from its use, and which will undoubtedly have its effect not only in the attainment of greater economy in production, but also in the not less desirable result of lessening the danger to life and limb, and materially diminishing the number of accidents to which, alas! all mine workers are liable."

Our readers generally are not so much interested in mining machinery as they are in other sorts of American manufactures, but the progress made in mining machinery is worth calling to their attention as showing that our inventors are not limited in their improvements of machinery to the agricultural implement or any other particular field. They are as versatile as they are progressive.

BAD MONTH FOR WARSHIPS.

LOVERS of peace throughout the world found arguments aplenty last month to support their doctrine that war is full of horrors and should be abolished entirely by civilized nations. They also found arguments against the system of having great naval establishments in time of peace, for two nations engaged in the peaceful pursuit of internal trade and foreign commerce were called upon to see loss of life in their naval equipment which might only be expected in times of war. Just three seconds of time changed the British submarine A1 from a participant in strategic maneuvers into a steel coffin for eleven brave men. One second of time put in peril the new American battleship Missouri and killed thirty-two of her officers and men in practice firing with her big twelve-inch guns. On the Missouri over a ton and a half of powder burned, and only the heroism of one of the men, who died later, saved the big fighting machine from total destruction. This sailor, injured as he was by the explosion of the first charge, jumped into the ship's magazine and closed the door after him. When the magazine was flooded he came very near being drowned like a rat, but fortunately escaped that fate. The value of time was never better demonstrated in relation to life itself on water than in these two instances.

Russia and Japan are at war, and disasters are to be expected in the navies of both nations, but Russia's loss of the big battleship Petropavlovsk, with Admiral Makaroff and a crew of 600 men, was one of the most interesting arguments which lovers of peace found to put forward in support of their opposition to war generally. Whether sunk by the Japanese or not, whether destroyed by mines or by some traitor who had access to her magazines, it was pointed out that civilization ought not to longer tolerate conditions which can rob 600 men of life in a moment without any resulting benefit to the world at large. There will be more tragedies of the sea before this war is ended, but the object lesson taught by them will undoubtedly prevent the governments of the world from resorting to war until after every avenue of diplomacy and arbitration is closed to them. Some of our contemporaries expect to see all Europe involved in a worldwide war, but if it ever comes we believe it will be a unity of peacefully disposed governments to crush some power that is disposed to rush headlong into conflict with some other nation that recognizes diplomacy and arbitration as the proper means of settling international disputes. The time is coming when war can no longer disturb or interfere with international commerce.

AUTOMOBILES VS. RAILROADS.

A GIANT automobile has recently been made in America for a resident of the city of Cleveland. The machine cost \$35,000, the motive power is equal to 300 horses and the car possesses every known convenience for travelers. In fact, it is quite equal to one of the palace cars on the American steam railroads in point of accommodation and comfort. This automobile is believed to be the largest ever built and its operation will be watched with interest for many reasons. Its owner intends to take a party of twenty-seven friends with him on a long summer tour through the central portion of the United States.

The construction of this enormous vehicle leads a progressive man to make a query and answer it as follows: "Now that good roads are being built between the largest American cities why may it not be possible to have lines of giant auto stages, running at short intervals? In this way the monopoly now possessed by the railroads might be broken. The automobile stage would pay nothing for its roadbed, and might afford to carry its passengers for a cent a mile or less."

Our friend is altogether too progressive. His query and his answer are what one may expect from a man who is thoughtful and enthusiastic, but not practical. At the same time he exhibits a faith in the future of American automobiles that is both interesting and refreshing. For his benefit it may be said that an American inventor is at work on an idea that may, if carried out, fulfil his dream in part. This is an automobile wheel which is to be so constructed that when the tires are inflated the machine will run anywhere as

would an ordinary automobile, but when the tires are deflated a flange like that of the tram-car wheels will be available to take flat rails which the inventor proposes to have laid along the streets of cities and the roadways in the country districts. The expense of providing the tracks is a prohibitive objection to the inventor's plan and the wear and tear on the wheels which he would have to make of both rubber and steel would limit their use to pleasure purposes. For commercial purposes the idea is quite as impracticable as is the proposition that automobiles will ever supplant the railroad trains.

Fast American railroad trains now average over sixty miles an hour, freight trains average thirty miles and even on the elevated roads in New York City with stations sometimes only a quarter of a mile apart the trains gain a headway of twenty or twenty-five miles an hour. In the suburban districts electric trolley cars run long stretches at twenty-five or thirty miles an hour. Without the rails to guide the wheels such speed would be inconsistent with even the semblance of safety, either to the persons in the cars or to other persons who might be near the roadway. The most powerful brakes would not stop a car within less than its own length, and if they were applied with full force would pitch all of the occupants either out of it or against its framework with practically the same force and speed which was being made at the time of the application of the brakes. Serious accidents would be inevitable.

Expert automobilists, who are enthusiastic up to the point of doing injury to themselves or others, inform us that the limit of safety on ordinary roads is so low in point of speed that the automobiles can never be expected to replace steam railroads, or even the electric trolley cars. The automobiles are coming more and more into general use in America, as they are everywhere, Americans are constantly making improvements in the construction of the machines and the future of the industry grows brighter every day—but anybody who takes the trouble to peruse the reports of the American railroads and notes the many billions of tons of freight carried, who takes account of the hundreds of thousands of locomotives and railroad cars that are used, who pauses to take into consideration the steady and rapid growth of our trade, will realize that it is impossible for the automobile ever to replace the railroad trains. The automobiles are now made useful for the local distribution of freight and they are becoming more popular commercially in the shape of vans, trucks and drays, but for business purposes they are not likely to enter into trade activity beyond the field which they now occupy—certainly they will never be able to catch up with the big railroads, either in speed or in capacity for handling the vast quantities of American manufactures and other goods that are carried by the railroads of the United States.

QUICK and accurate work at the guns is cultivated and encouraged in the American navy. Some marvelous scores were made during the practice firing last month. The battleship Texas wrested the world's championship from the Wisconsin, for with her 12-inch guns her men scored in one string of shots 11 hits out of 12 shots in ten minutes. In the other turret a record of 10 hits in 11 shots was made, which is a better record than that of the Wisconsin. The gun crews of other ships made splendid scores.

ENTRIES are already being made for the great race for the International Cup, to be held on June 17th, under the auspices of the Automobile Club of Germany. The United States will be represented, and we understand that the authorities will endeavor to give the contestants the best possible protection, and that safety will be an important element of the contest, although there will be no prescribed rate of speed, which, in fact, there could not be in a contest of this description.

FLYING machine stories are more numerous than ever before, and the claims made by some of the inventors are so great that even the layman is apt to regard them with suspicion. On another page we print the views of Thomas A. Edison, one of the most practical inventors known to the world. Mr. Edison does not believe the time is quite near for commercial airships and we agree with his conclusions.

OUR LABOR-SAVING MACHINERY.

FRANK H. ROSE, a British labor man, has written an article on "The Effects of Labor-Saving Machines," which appeared in a recent issue of the *Engineering Magazine*. Summed up in his own words his conclusion is as follows: "I cannot find that machinery has increased either the worker's wages or his leisure. But it has enlarged his opportunities for the profitable use of both. It has given him cheap and rapid transit and has enabled him to engage in pursuits and to cultivate tastes which would have been inaccessible without its aid." If labor-saving machinery has done nothing more than our British friend suggests, it has accomplished a great deal, but, as a matter of fact, American labor-saving machinery has done very much more than he believes. It has in America—whether it has or not in Great Britain—resulted in shorter hours for work and in higher wages for the workmen who have displayed proficiency in the operation of their machines. American employers, as a rule, are not at all selfish and their workmen receive consideration which results in better products than would be the case if they were treated like anything else than ambitious, intelligent human beings.

We have no interest in the question of union or non-union labor. The great majority of the labor unions in America are so jealous of the ability of their members to perform their duties satisfactorily that union membership is a guarantee usually of competence and is so accepted even by employers who may not like unionism for reasons that are not germane for our present purposes. The point of it all is that in many American shops, which are "controlled by the union" of workmen of the particular industry concerned, the union scale is cast to the winds. This is not done in a way that hurts the union or injures the men. A prominent American manufacturer of agricultural implements in conversation with the editor of THE AMERICAN EXPORTER recently explained his methods of dealing with his employees. He is personally opposed to unions, but he realized that he could get better workmen who were union men than he could secure outside of the union. He has carried the matter further than union or non-unionism. He does not care which sort of brand he gets. The man *must* make good, whether he belongs to the union or not. The minimum pay in his establishment is the union scale—the highest pay is so much higher than the union scale that some of our readers might hesitate to believe the figures. In this establishment there are no strikes, the workmen appreciate their larger pay and they are so much more attentive to the interests of their employer that he secures better practical results. In a few sentences he summed it all up as follows:

"My company, before I came into control, had a great deal of trouble with the labor unions. As a subordinate I saw that there was a feeling of hostility toward the company on the part of the workmen which was reciprocated by the directors. I knew, as a subordinate, that the men could do better work if they were treated differently. When I took charge I found a decided improvement. I did not bother about the union end of the game, but I watched the reports, got around myself and saw what was going on. The man on machine 18 was the first one to notice anything. His machine handled some of the most delicate parts that we turned out. After the change in management he seemed with less trouble than formerly to do one-third more work and do it better. There were others who seemed to accomplish more. I raised 18's pay \$2 a week without saying a word to him. He responded in increased effort to a degree that has saved us from the expense of putting in a duplicate machine and paying the wages of an extra man. His pay has since been increased and he is now earning and receiving \$16 a week more than the union scale. Other employees caught on to the fact that we were willing to pay for good work and while their rewards have been smaller than the one I have mentioned, the result has been more than satisfactory. The saving on waste effort and spoiled metal, as a matter of fact, more than offsets the increases in wages."

The manufacturer went into some detail that it would be inadvisable to print, but so far as we have quoted him no harm can be done, while our readers will become informed of new reasons for the success of American manufacturers in putting forth durable

articles which may seem to be cheaper than they ought to be. Of course, our manufactured articles are never too low-priced for their worth, for they are always proved to be well worth what may be paid for them.

OIL SHIP'S BIG SAVING.

IN expanding our foreign trade the cost of transportation is an important element and anything that tends to lower the cost without impairing the efficiency of the service of the ocean steamships is of importance to the merchants and consumers of every portion of the habitable globe. Elsewhere in this issue we publish an account of the results of the 12,000 mile voyage of an American steamship which was made under steam generated by oil fuel. Careful tests were made on two voyages, one with coal and the other with oil and the outcome was a remarkable victory in favor of oil fuel. As a result of the test it was shown that the oil fuel saved the owners approximately \$8,000 on the voyage which was conducted with that substance used as a means of generating motive power.

We have heretofore mentioned experiments made in the use of oil fuel on steamships, but we have not heard of any tests conducted upon the scale and under the circumstances that governed the experiment upon the steamship Nebraska. The greatest care was taken to obtain accurate information and the work was done by disinterested officers of the company owning the ship, so that their conclusions may be accepted as a sufficient basis for looking forward to further and early developments in this direction by transportation lines.

It is doubtful, for a variety of reasons, if oil fuel will immediately enter to any great extent into the economy of management of fast passenger steamships, although the saving in cost of fuel of 50 per cent. would be an important and an attractive item, but as to that our readers are less interested than they are in the commercial questions involved. Aside from the probability of lower freight rates, an important saving in time was effected by the Nebraska—and quicker transportation is quite as desirable in our export trade as lower freight rates. Both are important items to the purchasers of American goods and anything that tends to bring our manufacturers and their foreign customers closer together, either in the way of cheaper freights or more speedy delivery of goods, is not only of advantage to both parties to each transaction but tends to benefit the trade of the world at large.

Coal has for so long a time been the standard fuel for ocean steamships that the change to oil will come slowly, despite the demonstrated economy of the new fuel. The change, however, is not quite a revolution, such as the installation of turbines in place of reciprocating engines would be, but it is nevertheless a step forward in the progress of the twentieth century that will gather impetus, when ship owners become aware of its value, much faster than has the turbine idea, for the cost of changing furnace equipment is much less than that of installing complete new engines.

LAST month the first passenger train ran across our new colonial possession, the island of Porto Rico, to the great amazement of the natives. The railroad, with its branches, is 156 miles long and it is equipped in real American style. Since the United States acquired the island, the application of American methods has made a new country of it. New life and energy have been given to the Porto Ricans and their trade with the rest of the world has been given an impetus that is gratifying alike to the inhabitants and to this country.

WHILE the discoveries made by the British Antarctic Expedition were of no commercial importance, Americans generally were much interested in the accounts of Captain Scott's voyage, for much valuable information regarding the icy region around the South Pole was contributed toward their enlightenment.

GERMANY'S plan to increase her consular corps is an evidence of progress. We learn that the number assigned to the United States will be considerably increased, the object being to foster closer relations between the two countries.

A CONTINUOUS PERFORMANCE.

Graphic Account of Transformation of Methods in America's Steel Industry.

WHEN Mr. Wilson, the inventor at the Carnegie Homestead Steel Works, U. S. A., asked Charles M. Schwab to back him in marketing a non-nicotine, "continuous" dry, cold-smoke smoking-pipe, Mr. Schwab laughed and jocularly remarked: "Invent a 'continuous mill,' Wilson; I'll back you on that." Wilson shook his head. The idea, however, stayed with Mr. Schwab.

In steel mills, the course of the material as it goes through the process of manufacture is normally zigzag. The ore, the molten metal, and the billets are carried by machinery or on cars here and there and back and forth for treatment. The "continuous mill" would be one in which the material would follow an approximately straight line from process to process—the acme of economical handling. It would comprehend a complete chain of mills under one roof, beginning with the furnace in which the crude steel is smelted from the ores and ending with the bins from which the finished product is loaded into cars for shipment—a mill operated entirely by machinery.

When Mr. Schwab became president of the Carnegie Company, he discussed the possibilities of his "continuous mill" with Mr. Carnegie. About this time the company planned to compete in Europe with European manufacturers in the sale of steel bars. Then the bar prices fell, and the company was about to abandon its foreign project as unprofitable, when Mr. Carnegie said: "No, let us build Schwab's continuous mill. If it operates successfully, it will lessen the cost of production almost half. We can then compete anywhere. Never mind the expense of several million dollars. We may be about to revolutionize steel manufacture."

That is how the continuous "merchant-bar" mill came to be erected at the Carnegie Steel Company's plant at Duquesne, Pa., U. S. A. For it was built. The mill is a marvel in every sense. Its main shed is more than a mile long. At the south end is located a furnace. Here is received the ore, dolomite, pig iron and other material, which is emptied into the furnace by huge electric charging-machines. One charging-machine is apportioned to from six to twelve furnace pits, operated by a single man. Each furnace is operated by a force of three, while half a dozen laborers complete the entire force of the department. In this furnace the steel is prepared for pouring in liquid form into large ingot molds which are transported, when full, into another department on trains of "buggies," or little flat cars.

These molds are placed in cooling pits. To make place for them, other molds, which have stood there some time, are now removed and transported to the first set of rollers, where the crude ingots are now subjected to their first rolling. These ingots weigh tons each, yet so perfect is the automatic arrangement that but one man is necessary to operate the levers which throw the steel, now considerably reduced in size, across other rollers, and still others, to the final "shaping" machinery.

In less than fifteen minutes after leaving the cooling pits the ingot has been compressed into what is technically known as "a shape." This shape now passes through its very last set of rolls and is cut into sections of exactly the same length, size and weight. Each of these sections is known as a bar. This bar is red hot. In this condition it is marked by steel stamps and thus identified for shipment.

The bars, as many as fifty being cut every minute, must now be cooled and loaded. They, therefore, pass up a ladder-like inclined plane to an elevation of about twenty-five feet. At this point the cooling bins are reached, into which they fall in great confusion. These bins resemble those of a great granary, except that they are built of steel and are perforated. Gallons of water are sprinkled over them continuously. The water and atmosphere quickly cool the newly made bars. The gates of the bins are now thrown open and the whole lot is dumped into steel cars that have been placed directly below. The process of manufacture is now complete.

That the process is economical is obvious, occupying hardly more than an hour after pouring of the steel from the pits of the furnace. Rush orders have often been received in the Carnegie Company's office at Pittsburg at 6 o'clock in the evening, and by 6 the next morning the proper number of bars have been manufactured, loaded and shipped to their destination.

There is a saving, too, in labor. Fewer men are employed in this continuous mill than in any single department of any other Carnegie mill. In transportation, also, there is saving. Whereas, at Homestead, for example, the hot ingots must be carried by means of steam locomotives, often a half mile through the yard, here they proceed to the rollers direct and reach their destination within a few minutes.

This mill is, indeed, a near approach to the solution of the grave problem of limited operating space that confronts steel manufacturers everywhere today. It is a triumph of industrial management.—*World's Work*.

British View of American Steel Methods.

IN the course of an excellent paper contributed to the West of Scotland Iron and Steel Institute, H. G. Waddie recently pointed out what he considered to be the real difference between the management of American steel mills and the British method. The central idea of American mill practice, he believed, was to get the largest possible output with the smallest pay-roll, and to attain this object all available labor-saving appliances were introduced, and continu-

ous working, with the aid, where possible, of continuous furnaces, had brought this system of working to a stage of comparative perfection. Wherever the movement of the material through the mill was independent of physical effort it was obvious that more work would be accomplished, as the continuous flow of material from one department to the other was only dependent on the furnace capacity. The successful introduction of labor-saving methods was dependent as much on the quality of labor employed as it was on the capital invested.

The prominence given to young men in the United States was a matter of surprise to many, he said, but he saw no reason for preference being shown to the older men, irrespective of ability, and he feared this was found the case in British practice. Why, he asked, should they stick to the apprenticeship system at home? Of what use was it to talk about bursaries and aids to pushing boys if they were to be forced to work for next to nothing during the period when they ought to be gaining a knowledge of their own value and acquiring that spirit of independence which is the feature of the American boy?

The subject of cheap production of iron and steel in the United States was not entirely due, in his opinion, to any great advance in plant or machinery, but rather to exceptionally cheap raw materials, transportation and the extensive scale on which operations were conducted.

Among other points mentioned by Mr. Waddie was the greater remuneration offered in the United States for good executive ability. Longer hours were worked, and the number of ordinary or unskilled laborers was not worth mentioning. Another feature of the American method was the distribution of the mills over a wider area of ground, while at home they were usually handicapped by the dimensions of the land at their disposal. The American mill was put down to make certain sections, and there was no endeavor to tackle every kind of steel order that might be offered. Again, wherever one went, most noticeable to the accustomed British ear in the mills, was the hum of the various motors at work all over the place, and why this power had taken so long to obtain a hold in the home works was a mystery.

New Profession—Doctoring Business Houses.

NEW ideas in business methods are constantly coming to the front in the United States. There is a new profession, reported to have in this country and at this time not more than half a dozen or so followers. It has dubbed itself "industrial engineering." The industrial engineer is an expert in business methods, labor-saving, and especial money-saving devices, all manner of commercial economies, and you are supposed to call him in as you do your doctor or your lawyer—even, perhaps, if you are able, keep one of him constantly at your elbow, as some people do their private particular doctors and lawyers. If you are a manufacturer, and you find your enterprise is not producing as many dollars as your wife can comfortably spend, you call in the industrial engineer. You explain to him all your methods, you show him your plant, your books, your bookkeepers all in a row on high stools. The industrial engineer, after more or less minute inspection, diagnoses the case. He shows you perhaps a waste in materials or how one set of books may serve where you are keeping two, demonstrates how the introduction of a particular set of machinery would in one year save enough to pay for it—and other things of that kind. Presumably, if you follow his suggestions your wife will presently be astonished at the readiness with which you give up the cash for her fallals, arts and charities. Again, if you are starting a new enterprise, you do not go it blind, but take expert industrial engineering advice as to the scale which is likely to be most profitable, as to each means of making every edge cut, as to a mass of details about which even though you are a good business man you may well be ignorant. Obviously, the industrial engineer may in both these cases be very useful and his fee may be large. Obviously, also, an industrial engineer must be a bona-fide expert, or something unexpected and sad will happen. The profession, exacting as it is, is already launched, and some have succeeded at it. There are offices of the kind in New York, Boston and other cities—offices full of file cases bearing on the systematizing and reorganization of commercial undertakings, as well as upon a mass of things which must be considered in order to understand diverse business. The industrial engineer, it is plain, is likely to have to consult with an infinite variety of other experts—accountants, mining engineers, electrical engineers, lawyers, sanitarians, architects, machinists, etc.

New Zealand to Have American Trolleys.

DESPITE the fact that the award was made to a New Zealand concern for the construction and equipment of the extensive electric traction system to be operated in and around Christchurch, practically all the material, equipment, etc., will be manufactured in the United States. The major portion of the subcontracts have already been awarded. The New Zealand Electric Construction Company, which was organized recently for the chief purpose of developing the water powers in New Zealand, will carry out the work of building the Christchurch lines. More than thirty miles of road will be constructed under the existing contract. The value of the contract is about \$1,250,000. The municipal authorities will operate the lines. The rails will be furnished by an American concern, and the cars, motors and trucks will be built in this country.

American Machinery for Great Britain.—A manufacturing company in Ohio has recently secured a large contract for machinery with which to equip British paper mills.

A WONDER OR A FAKE.

Professor Thinks He Has Discovered Force That Defies Law of Gravitation.

WONDERS, it is said, will never cease. Prof. E. L. Scharf, formerly of the faculty of the Catholic University of America, believes he has discovered the principle of negative gravity, whereby buildings can be lifted from the land and warships fearing submarine torpedo attacks may leave the water for safety in the air. Professor Scharf is a scientist, who has obtained some recognition, and a New York paper recently devoted a large amount of space to his alleged discovery. We may as well say that we do not indorse Professor Scharf in any way, but there is a bare possibility that his theories may have something in them, and we give our readers the information solely for the purpose of keeping them fully informed about the novelties of thought and scientific investigation that are going on in America. Professor Scharf says about his discovery: "I firmly believe that within fifty years the force called levitation will be so thoroughly understood and its uses and control so well demonstrated that it will occupy a position in the list of great public utilities, such as the electric telegraph, the telephone, the wireless telegraph and the electric railway hold to-day."

As a matter of fact, what he believes he has discovered ought to excite little more wonder now than electric lights, or telephones, or wireless telegraphy would have aroused half a century ago. Nobody knows the limits of man's genius or Nature's possibilities. A century ago, or half a century ago, this American professor would have been consigned to an asylum for lunatics, but in the present age of discovery his own account may be considered worth reading and further developments may be awaited. If there are any the readers of THE AMERICAN EXPORTER will be duly informed of the fact.

This is what he says:

"The earth being charged with positive electricity, proves that if a man could charge himself with the same sort of electricity he would be repelled from the earth's surface. 'Like repels like,' and opposites attract each other. It is a rule that is as old as the hills. You remember the elementary experiment with the two cork balls, suspended with silk cords. You rub one with resin, inducing a positive charge, the other with glass, charging it negatively. Then you approximate the balls and they fly together. Now you rub with glass the ball you had rubbed with resin, and on approximating them you find that they spring apart from each other. What does this prove? Both the axiomatic repulsion of similarly charged electrical bodies and the fact that it is possible to change the electrical nature of a given body.

"By charging my body with the same positive force that the earth contains I have actually reduced the weight of my body seven pounds, and only stopped the experiment there because I began to feel a fainting sensation about the heart that made me think perhaps there might be danger in the experiment. I had insulated a pair of the finest scales by placing them upon glass. Close to the scales I placed my electrical appliance, the construction of which I will, of course, not divulge, beyond saying that it employs wires which run from beneath the surface of the earth, connect with my body and back to earth again.

"Stepping on the platform of the delicately adjusted weighing machine, I noted with the greatest care the succeeding registration. I was growing lighter! One, two, three pounds was gone from my normal weight of a moment before. Prudence or timorousness dictated a halt, but the exhilaration of hope, the impelling desire to put my discovery to a positive test, bade me continue. The sensitive register showed a constant diminution of my weight. Four—five—six—yes, seven pounds lighter than when I first took the record. Accompanying this loss of weight were strange sensations, such as never in all my life had I experienced.

"A sense as of casting off physical moorings crept over me. Lightness gradually pervaded my body, and as I turned on the current I felt as if I was actually rising; yes, almost flying. It was a peculiar feeling about my heart which decided me to suspend the experiments, until I can test my plan on dummies and the lower animals, to make sure there is no attendant danger, or, if there is such danger, to obviate it.

"For years the idea of such a force opposed to gravity had buzzed in my brain. My attention was first called to it while I was connected with the Catholic University. The reading of the modern and classic Hindoo and Persian works made me take notice of the claim, seemingly substantiated, that seers of these two races were able by prostrating themselves upon the ground, and by other mystic rites which probably had nothing to do with the natural phenomena, to raise their bodies into the air. The fact that all the levitation claimed by the Eastern doctors was and is preceded by prostration upon the ground reveals the secret of the phenomena.

"I naturally inferred that something in the earth itself was the power which, properly controlled, was strong enough to successfully oppose the attraction of earth for physical objects. As a scientist, I knew that electricity was the underlying principle of many physical manifestations, and that the earth was charged with the positive element of electricity.

"As soon as I stepped from the scales, after my experiment of charging my body with positive force and reducing my weight seven pounds, the energy employed in the experiment departed to the earth, and a moment after, stepping upon the scales, I found that my weight was normal again. I firmly believe that within fifty years the force which for want of a better name has been called levitation will be so thoroughly understood and its uses and con-

trol so well demonstrated that it will then occupy a position in the list of great public utilities, such as the electric telegraph, the telephone, the wireless telegraph and the electric railway hold to-day."

It is not necessary to seriously discuss Professor Scharf's claims, but if there is anything in them a great field for speculation is opened.

Over Four Hundred Patents for Artificial Fuels.

REQUESTS from our foreign readers are received nearly every week about artificial fuel. From time to time we print what is current information on the subject in America. It is difficult to keep track of all the discoveries in this line. The following from an American Government publication is certain to interest them: "Everybody who has spent any time on the Continent of Europe has noticed the economy practiced by Europeans in the consumption of coal and marveled that the results should be so satisfactory. To be sure, the lofty, tombstone-like porcelain stove of the Germans has a chilly look at first, and the cooler atmosphere of German houses may give one a homesick longing for the furnace-heated rooms of America, but gradually the open-minded stranger comes to look with approval on the European arrangements for keeping warm, and to wonder why his own people have not perceived the beauty, the cleanliness, the economy and satisfactory results that some patent fuels have to recommend them. That many an American has turned the matter over in his busy brain is attested by a chapter on artificial fuels in Edward W. Parker's report on 'The Production of Coal in 1902,' which is about to be published by the United States Geological Survey as an extract from the annual volume of Mineral Resources.

"Prior to 1902 about 400 patents had been issued in the United States on artificial fuels, but up to the close of 1901 none had proved a commercial success. Mr. Parker gives a list of United States patents granted since January 1, 1902. It remains to be seen whether any of them will be successfully developed. The list includes thirty-seven patents, but contains no mention of fuels made from petroleum or petroleum residue unless used in connection with coal, lignite or peat. Neither does it include any compounds that have for their object the increase of fuel efficiency unless they are used in the manufacture of the fuel itself. Three patents were used on briquetting machinery. The steady advance in the price of coal—no less than 40 per cent.—which has taken place since 1898 has stimulated experiments looking to the invention of artificial fuels."

Germans Becoming More Interested in America.

UNITED STATES CONSUL HARRIS, at Mannheim, Germany, in a recent report made to the American Department of Commerce, gives some interesting information regarding the attention which the development of the United States has attracted in the Kaiser's domain. Says Consul Harris: "The recent marked increased interest among intelligent people of Germany in the institutions, industrial conditions and history of the United States is worthy of note. This increase has manifested itself in a variety of ways. There has been, for example, a considerable array of new and well-written German books on purely American topics. These books are found in all the leading book stores, and have been widely sold and commented upon. German newspapers and periodicals have published within the past year an unusually large number of letters describing travels in the United States, and leading articles on educational, industrial and other topics. Engineering, architecture, the legal status of woman, prison reform, college and university instruction, and a wide variety of subjects relating to the United States have received attention at the hands of newspaper and magazine writers in Germany.

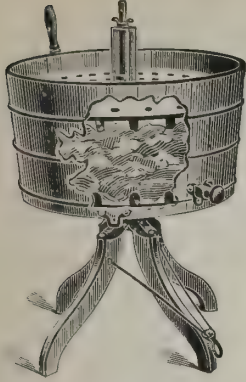
"In at least two of the great German universities—Berlin and Heidelberg—during the present university year lectures are being given on the history of the United States. This has marked a departure in German university instruction and will greatly stimulate interest in the subject. This increase of interest in the United States is doubtless due to several causes, among which was the visit of Prince Henry of Prussia and the cordial feelings which the visit aroused on both sides of the water. While it would not be expected that all who write on American topics as seen from the German standpoint would fully agree, or that the conclusions reached would all be favorable, the general tone has been friendly and appreciative."

Automobile Progress in United States.

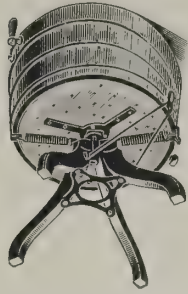
NEW YORK'S Automobile Club will hold a contest of "business" vehicles this month covering a practical test. THE AMERICAN EXPORTER chronicled last year's test as showing excellent results, but the promoters expect that the showing this year will be much better. This year the club will have vehicles employed for one week doing some merchant's regular routine of cartage work, accompanied by a technical observer who will note points of interest. The awards will be given according to the observer's notes. The Society of Automobile Engineers, recently formed in New York, will hold meetings regularly for the discussion of practical automobile building. In every American city the increased use of auto trucks and delivery wagons shows the practical use of the automobile. In New York Fire Chief Croker uses an automobile to go to fires. In one morning he visited six fires—two of them ten miles apart. This would not have been possible had he used a horse. Physicians, inspectors and trade solicitors find the automobile a great time-saver.

"1900" Washing Machine

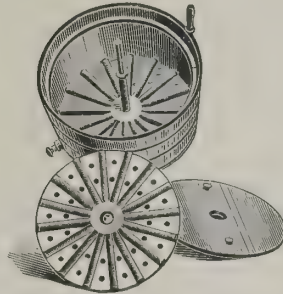
AND ITS PARTS.



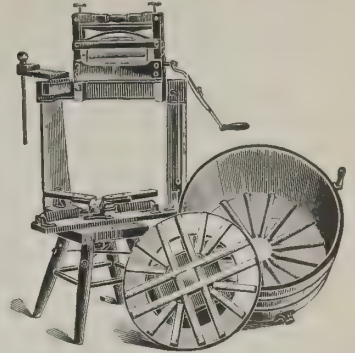
Interior view, showing clothes in process of washing.



Looking under Bottom of Washer.



Inside view of Tub and Bottom of Agitator.



Shows Washer with the tub removed from the frame and the agitator or disk which rests on the clothes and water during washing. It also shows the wringer in position as when in use.



"1900" Washer.



"Domestic" Washer.



"Home" Washer.



"1900 Junior" Washer.



"1900" Washer.

A Remarkable Record!!!

Reward of Merit!!!

Commencing in the year 1900 to manufacture the "1900" Washing Machine, we at that time "turned out" an average of Five Washers per day. During the month of August, 1903, we manufactured and sold OVER FOUR HUNDRED Washers per day.

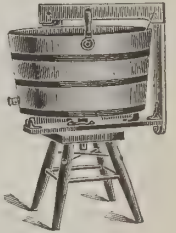
A Remarkable Record!!!

Reward of Merit!!!

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-one years' practical experience in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment**, but by the adoption of our **agitator** tosses and tumbles the garment through a **whirlpool of water**, thus **forcing the water through the finest or coarsest fabrics**, causing the clothes to become **ABSOLUTELY CLEAN**, without boiling or scrubbing, without wear or tear, and without the use of chemicals.



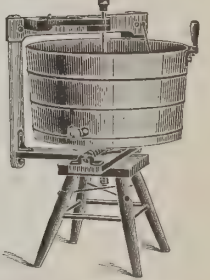
"1900" Washer.



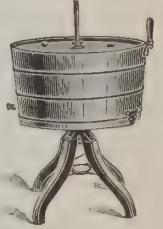
"Domestic" Washer.



"Home" Washer.

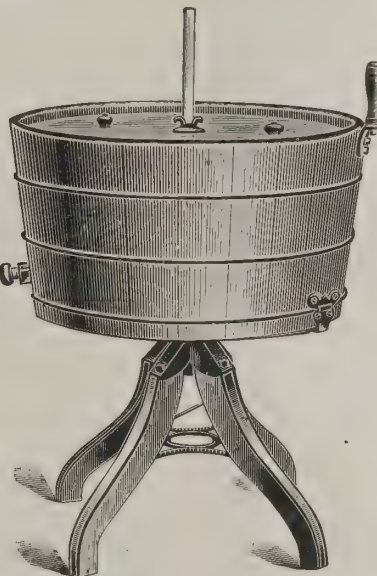


"1900 Junior" Washer.



"1900" Washer.

"1900" Ball-Bearing Washing Machines.



THE "1900" WASHING MACHINE.
Complete, Ready for Use.

"1900" Ball-Bearing Washing Machines.

Special Offer for Foreign Markets Only:

\$22.75

Upon receipt of Twenty-two Dollars and Seventy-five Cents in U. S. gold, or its equivalent, we will box, ready for steamer, and deliver F. O. B. cars at New York City, **One of Each (Four in All), "1900," "1900 Junior," "Domestic" and "Home" "1900" BALL-BEARING WASHING MACHINES.** Weight of the four machines, boxed, 340 pounds.

To facilitate our increasing export trade we desire to communicate with one responsible business house in each trade center of the world.

Tens of thousands of the "1900" Washing Machines have been sold in the United States, as well as in all parts of the world. Many of our agents at home are making over \$200 per month. Live men in your vicinity can do as well.

Orders received direct or through export houses; when ordering through the latter, to avoid errors, please mail us a duplicate of order. Our Illustrated Catalogue mailed postpaid.

The "1900" WASHER COMPANY

BINGHAMTON · NEW YORK · U.S.A.

Fuel Oil Fifty Per Cent. Cheaper for This Ship.

Oil as a fuel for locomotives and steamships has been a matter of investigation and experiment for some time and frequent reference has been made in THE AMERICAN EXPORTER regarding the progress made in this direction. Showing that the use of oil as a fuel on an ocean liner is a saving of more than one-half of the cost of coal, the comparative cost of the trips of the American steamship Nebraskan, after completing a 12,000 mile voyage, were made public last month by the American-Hawaiian Steamship company. Capt. W. D. Burnham, superintendent of the company, and V. F. Lasoe, engineer-in-chief, were highly elated over the result, and without doubt other ships of the fleet will be equipped for burning oil. The Nenadau, a sister ship, is thus fitted out, but the remainder of the large fleet are coal burners.

The long voyage of the Nebraskan from San Francisco to New York, the record trip of the world for vessels using oil as fuel, is attracting universal inquiry from maritime interests. Representing the Liquid Fuel Board of the United States Navy, Commander John R. Edwards, the president of the Board, and his confrères made a careful inspection of the Nebraskan.

One of the 1,400 horse-power boilers was shown with oil fires beneath it, the other not in action allowed for the examination of the burners and connections and an inspection of the action of the flames on the tubes and shell of the boiler.

On her first voyage the Nebraskan left New York August 7, 1902, and touching at the ports of St. Lucia, B. W. I., and Coronel, Chili, for coal, reached her destination in 57 days, 5 hours and 43 minutes. On that voyage 2,267 tons of coal were burned, costing \$10,050, and a crew of fifteen men was necessary in the fireroom. As on the trip just finished, the ship was at top speed under trial conditions.

With a greater cargo in her hold, the recent voyage, with oil as fuel, was completed in 52 days, 7 hours and 26 minutes, and 8,826 barrels, or 1,260 tons, of California fuel oil were consumed, costing \$5,500. There were nine men less in the fireroom, whose wages approximate \$50 a month each, and 457 tons of measured space for cargo was saved by reason of the lesser bulk of the oil. Five days were saved on the passage because no stops were made for coal and the trip's earnings were increased at the rate of \$500 a day, or \$2,500.

"Then there is the absence of cost of handling of ashes and the wear and tear of machinery necessary to do the work," said Capt. W. D. Burnham. "We expected that the fuel oil would make a good showing, but this result more than pleases us. I do not think that such a trial has ever before been made in the world. More than twenty-four thousand miles in the round trip, and on each of the two voyages, all on board, from the captain to those in the fireroom, doing their level best to make a record."

"Does the burning of oil affect the insurance?" was asked.

"No, our underwriters are satisfied because of the careful construction of the tanks. On each end of all of the tanks a coffer dam of steel is constructed to take off any leakage. So far there has been none. All the lighter portions of the oil have been removed and we are burning a residuum which has a high flash test."

International Steel Agreement Unlikely.

STEEL manufacturers from various countries were in consultation in London at the time this issue of THE AMERICAN EXPORTER went to press.

A despatch from London to the American Associated Press gave briefly this information as to the conference, which may be of interest to some of our readers: "Even the most sanguine do not expect immediate results from the exchange of views, now in progress here (in London) between representatives of steel manufacturers of the United States, Germany, Great Britain, Austria-Hungary and Belgium, with the object of establishing among the steelmakers of the important exporting countries an agreement whereby export prices will be fixed and indiscriminate 'dumping' be prevented. The movement, which was initiated by the Germans, will, it is thought by many interested persons, find an insuperable bar in the attitude of an influential body of Britishers who are equally interested as producers and consumers of steel in turning out the more highly finished class of goods and who profit from the dumping."

Officials of the United States Steel Corporation said that no representatives of that corporation attended any conference in London looking to a division of the neutral markets of the world. They admitted that the German trusts had made propositions of a tentative character looking to an agreement regarding prices in neutral markets, such as South Africa, China, Japan, South America and European nations, but that the advances had not resulted in establishing any definite conclusions. Several conferences abroad have been held, at which German, Dutch and English manufacturers have attempted to reach agreements, but the meetings did not bear any fruit.

At the present time the United States Steel Corporation is selling its goods in the world's markets at the best prices the trade will command. This is being done in an active competition with Germany, the chief competitor of the United States in the iron and steel business. Both countries are competing for business in England, where they are able to undersell the domestic manufacturers in raw steel, such as tin bars, billets and the heavy forms. In the manufactured forms, particularly in tin plate, England is easily able to hold its own.

This statement, which can be accepted as reflecting the official view of the United States Steel Corporation toward the division of the world's markets,

was made: "We have no part in any conference regarding the maintenance of price in neutral markets or other trade agreements. Our position is such that we believe that we can dictate terms, but no proposition has been submitted. We are simply awaiting developments abroad, believing that the time will come when trade arrangements covering the world's neutral markets can be made. In the meantime the Steel Corporation is selling goods as fast as it can and to the best advantage."

British Praise for American Railways.

NEVILLE PRIESTLY, Under Secretary to the Government of India, Railways Department, who was sent to the United States last summer to study American railways, has submitted his report. "The railways of America," says the report, "are commercial undertakings on a gigantic scale, and are operated under conditions which are to be found nowhere else in the world, since they receive no protection from the State and have had to fight their way to the front by sheer ability of management. If I have appeared enthusiastic at times it is because I was greatly impressed by the courage with which the railroad officers have faced their difficulties and the pluck with which they have overcome them. It is impossible to associate with the great men who have made their mark on American railways—I may say American national history—without being infected with some of the enthusiasm they show for their business, and no man can travel over their railways without becoming possessed of a great deal more knowledge than he previously had or without getting many valuable hints."

"Many of their methods are different from those one has been brought up to believe the only correct method, and it is not until one realizes that the one idea in the mind of American railway men is to 'get there,' and that they do 'get there' by the shortest and quickest way, and do not allow themselves to be turned aside either by red tape, old-time prejudices, tradition or any other of the bogies by which older countries are assailed, that one understands how the results have been obtained which one sees there. American railway men are quick to see a new idea; they are quicker still to try it; they take great pride in their profession, and are all striving to get at the science of it."

"That their methods are not always perfect is what might have been expected, but they have managed to do what no other country in the world has done, and that is, carry their goods traffic profitably at extraordinarily low rates, notwithstanding the fact that they pay more for their labor than any other country."

"It is in the study of how they do this that much benefit can be derived by other countries, and if I have in some degree succeeded in throwing light on their methods I shall feel that I have benefited others as well as myself by my visit to that great country where the courtesy of the people is only exceeded by their hospitality."

Largest Steam Engine for World's Fair.

LARGER than any other steam engine on the earth is the one that has just been shipped to the American World's Fair by the Allis-Chalmers Company. More than twenty railroad cars were required to transport it. It is a 5,000 horse-power machine. Two engines on the same pattern are in course of construction for the Manhattan Elevated Railway power plant. The machine is to be installed in the center nave of Machinery Hall, just east of the big gas engine which will hold a place directly opposite the main entrance. The foundations for the giant are already in place and the installation will begin at once.

The total gross weight of the shipment was 720 tons divided into 202 packages. The heaviest single package, made up of the shaft of the engine, together with the hub of the flywheel, was in ten pieces and its total weight is 116 tons. The engine, when erected, will occupy a floor space of 50 by 40 feet and will tower 39 feet above the floor level. The foundations extend 22 feet below the floor level. To install this engine a special crane will be used. This crane has a lifting power of 75 tons and will be able to lift the largest single casting of the giant.

Agricultural Machinery Opportunities in South Africa.—The *Welthandel* (*World's Commerce*) states that Mr. Henry Birchenough, who was sent to South Africa as commissioner by the British Board of Trade, calls attention to the favorable opportunity in the Orange and Transvaal colonies for the sale of agricultural implements and cheap farm utensils. The agricultural development of these colonies will be tremendous as soon as the projected railroads are completed, and, as the colonies have to start over again, there is now and will be a great demand for light plows, harrows, creamery utensils, etc. The Americans, says Mr. Birchenough, have recognized this already and are trying hard to secure as large a share as possible of this commerce.

More British Visitors Coming to America.—Fresh proof of the friendly attitude of British people toward America is to be found in the fact that in the autumn of this year the members of the British Iron and Steel Institute are to spend a month in this country making a round of the steel plants and shipbuilding yards.

Russia Likes Our Oil Filters.—The Burt Manufacturing Company, of Akron, O., recently received an order for thirty gross of its oil filters and another order through its agent in St. Petersburg for a large number of the same articles for the Russian Government.



**THEY
CUT,
PLANT,
SPRAY,
DIG and
SORT.**

Aspinwall Potato Machines

Make Large Profits Easy by Economizing in Time, Labor and Money.

We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

With Our Machines seed is quickly cut to best advantage. Planting, fertilizing and covering are accomplished at any depth and width of row desired. Spraying is effectively done for bugs and blight. Digging and sorting are made pleasant and agreeable work by our time and labor saving machines.

Our catalogue, illustrating and describing the various styles of

ASPINWALL POTATO

Planters, Cutters, Sprayers, Diggers and Sorters made by us, mailed postpaid.

Aspinwall Mfg. Co., Jackson, Mich., U.S.A.



F. R. PATCH MFG. CO.,

RUTLAND, VERMONT, U. S. A.

BUILDERS OF

Stone-Working Machinery.

Specialists in the Construction of Planing, Sawing and Polishing Machines for Stone.



The world-famed marble mills at Rutland, Vt., owned by the Vermont Marble Co., are equipped with many of these machines which give the smoothest and best polished surface obtainable. This "Marble City" Polisher will polish any stone up to 3 feet in thickness. It has a swing of 7 feet 8 inches, so that by turning stone around, 15 feet or more square can be polished.

A patent wind-up apparatus either raises or lowers the polishing arm, as is desired, by merely pushing in or pulling out the lever shown near the handle in the cut. This rising and lowering apparatus consists of small gears on a level shown at the top of the machine, which itself rises and falls on the screw shafting, easily seen in the cut.

The total height of the polisher is 9 feet 6 inches and weighs, when boxed ready for shipment, 1,600 lbs.

We carry a large number of these in stock, - so that prompt delivery can be made.

The Burt Exhaust Head Realizes the Highest Expectations.



"The Burt Exhaust Head has fully come up to our expectations. These expectations were very high, and the work to be done in saving fuel, stopping waste and preventing a nuisance by reducing the noise of exhaust was more, really, than we expected the head to do, but it has accomplished it to our complete satisfaction. Thanking you for calling our attention to this valuable addition and help to our plant, we are,

"Yours very truly,
"SELMA (ALA.) WATER CO."

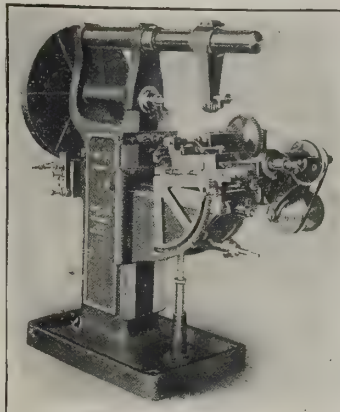
The water and oil that issue from the exhaust pipe disfigure, rot and rust the roof or walls of your plant. The Burt Exhaust Head allows nothing but absolutely dry steam to escape, thus it saves many dollars for repairs. The Burt Exhaust Head is the most reliable, the safest and most efficient head made.

The Burt Mfg. Co., 217 Main Street,
Akron, Ohio, U. S. A.
Largest Manufacturers of OIL FILTERS in the World.
Supplied also by Engine Builders, Dealers and Power Contractors.

BECKER-BRAINARD

Automatic Gear-Cutting Machines

CUT SPUR, BEVEL AND WORM GEARS.



Each size will cut a range of gears requiring two ordinary machines.

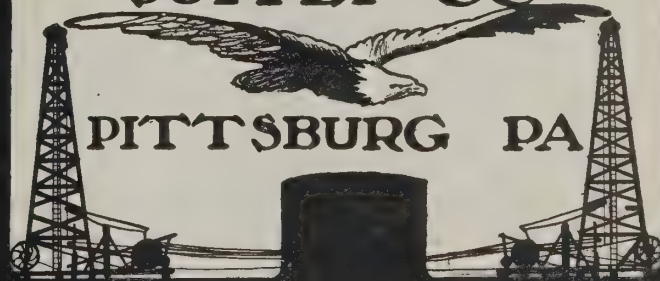
All working parts being simple and in plain sight, are easily adjusted.

If you wish to cut accurate gears at the least cost, write for further information.

BECKER-BRAINARD MILLING MACHINE CO., Hyde Park, Mass., U. S. A.

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NATIONAL SUPPLY CO.



MANUFACTURERS OF
ALL KINDS OF SUPPLIES
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OIL AND GAS WELLS.

**Derricks and Rig Irons,
Boilers and Engines,
Drive Pipe Casing and Tubing,
Drilling and Fishing Tools,
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We furnish Complete Outfits ready for drilling.

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OUR AMERICAN WORKMEN.

Facts About the Men Who Make the Best Machinery Produced Anywhere.

ONE of the secrets of the success of American manufacturers is in having skillful workmen. The question of the merits of unionism or non-unionism is one that does not enter what we have to say at this time, but, regardless of what anybody may think, it is, nevertheless, true that the union machinists of America are wonderfully good workmen, and that their organization is a remarkable one. Frank G. Carpenter has recently contributed an interesting article to the *Washington Star* upon the subject, and some brief extracts from it will give our foreign readers an idea of the sort of stuff American workmen are made of. Mr. Carpenter says:

"I met President O'Connell at the headquarters of the International Association of Machinists in Washington. They take up the greater part of a floor of a large building, and their business is managed as carefully as that of a bank or a great mercantile establishment. Two typewriters were clicking away in Mr. O'Connell's office as I entered, and they kept on clicking while we talked. I first asked as to just what the International Association of Machinists was. Mr. O'Connell replied:

"The International Association of Machinists has more than 70,000 members, and it embraces about half of all the men in the trade. It has local unions scattered all over the United States, Canada and Mexico, the largest being in the chief manufacturing centers. In Chicago there are about eighteen different unions, each of which sends its delegates to a district union, which acts for that city. We have a large number of local unions in New York, Boston and Pittsburgh, and more or less in every manufacturing city of the South and West.

"The word machinist as applied to our trade,' said President O'Connell, 'represents the highest intelligence and the greatest skill among the men who deal with machinery. In our sense, the machinist is the man who makes, erects and repairs all descriptions of machines and machine tools. It is not the man who runs the machine to produce another product after they are made. Our men design and make machines with the aid of drawings. They operate machines to make machines and machine tools, and they have to be able to do all kinds of work and repairs on any kind of machines from patterns, and that within a reasonable time.

"Their work includes the making of the finest and most delicate machinery, such as the tools with which watch movements are made, and it includes the making of the heaviest and coarsest of machinery, even to the great lathes which bore out the guns for our men-of-war. The machines for making bicycles, automobiles, typewriters, sewing-machines, and, in fact, every kind of machine and machine tool, is the work of the machinist. Such work requires great intelligence and skill. The man must be an inventor as well as a mechanic. He has new problems coming up with every job, and he has to use his judgment in almost every bit of repairs which comes before him."

President O'Connell denied that his association tried to restrict the output, and was asked if the rule about one man to each machine did not operate in that way.

"Not in work like we do," replied Mr. O'Connell. "Our machines are necessarily fine, and we have to insist upon that rule to protect ourselves. The employer will say he is willing to stand the loss of any work spoiled by having a man run several machines, but we find that if the work is spoiled the man is discharged sooner or later. In some of our work a man does not need to touch his machine for a long time, as, for instance, in boring out the barrels of great guns. A machine may be set and take twelve hours before the boring is completed. We insist upon having a man watch that machine, for the least break or fault may ruin the whole work, whereas, if the man is there he can remedy the defect the moment it comes."

"Our machines," Mr. O'Connell went on, "are so fine that they need constant watching, and the mistake of a hair's breadth may cost thousands of dollars. The bricklayer knocks off too much from the corner of a brick with his trowel in laying a wall; he throws in an extra pint of mortar and the fault is repaired. In the machinist's work the mistake of one ten-thousandth of an inch may destroy a machine, and much of our work has to be correct even to the hundred-thousandth of an inch."

So that the union system, as applied by Mr. O'Connell's union, is responsible for better work than might be otherwise produced. Accuracy and attention to details in producing American machinery are of great importance to the purchasers, and this brief insight into American methods will show our readers that when they are buying our machinery they are getting the best that can be manufactured. All of the advertisers in *THE AMERICAN EXPORTER* manufacture their goods with the same degree of care that President O'Connell insists upon. Of course, he does it for the protection of his members, but the manufacturers, the exporters and the customers in foreign countries are equal beneficiaries.

American Car Couplers in Bavaria.—The Bavarian railways have been for some time making experiments with American couplers. In the summer of 1903 trials were given in Nuremberg, and experiments were made anew on special trains early this year. The report is most favorable. The main point was what change could be made from the present screw coupling to the self-acting coupler.—*James H. Worman, United States Consul-General, Munich, Germany.*

Two Miles a Minute—Oddities of Speed.

WHEN one of the fast American auto boats is dashing through the water at the rate of from 20 to 25 miles an hour the propeller wheel revolves from 500 to 1,250 times in a minute. When the number of revolutions is stated one rarely comprehends what it means. In a boat of high power the propeller will be 23 inches in diameter. This means that its periphery is a little over 6 feet. If this screw revolves at the rate of 1,250 times a minute the outer edge of the blades of the propeller are cutting through the water at the rate of just one and a third miles a minute.

These propellers are not flat. If they were they would have no purchase on the water and the boat would not move an inch. To give them a grip on the water each blade is twisted slightly, like a spiral, and this twist increases the stretch of the blade beyond its circumference by about 1.4, so that what marine engineers call the helicoid path of the propeller would be very nearly two miles a minute. This remarkable speed is produced by a motor that is only 28 inches wide, 40 inches long and 41 inches high. It develops a horsepower of about 65.

The propellers which drive the fast Atlantic liners are about 48 feet in circumference. The tip of the blade will cover about a mile and a fifth each minute when revolving at full speed.

The United States cruiser *Minneapolis*, which is one of the fastest in the American navy, has propellers 48 feet in circumference. They make 132 revolutions a minute, so that the tip of the blade when driven at full speed is traveling at the rate of 6,336 feet each minute, and the helicoid path, or the distance covered by the spiral twist of the blade, is 8,870 feet a minute, or more than a mile and a half.

The *Minneapolis* and the ocean liners are driven by steam, but in the fast auto boats gasoline is the motive power. It can be understood to what a nicety the mechanism in a gasoline engine is adjusted when it is stated that to make 1,000 revolutions a minute means that in a four-cycle engine there are 500 sprays of gasoline forced into the cylinder. Five hundred times the electric battery makes a spark and 500 times the escape valve is opened to let the gas out.

If there are four cylinders at work on the same shaft, and many of the fast boats have four cylinders, then each operation is repeated four times. Some motors have eight cylinders, and one is now being built that will have twelve cylinders. It is figured that a motor uses a pint of gasoline for each horse-power an hour. An eight-horse-power motor will use a gallon of gasoline an hour and will cost about 16 or 17 cents an hour to run. A 24-horse-power motor will take three gallons an hour, which will make the cost about 50 cents an hour.

There is a motor boat now being built in America that is to have a 500-horse-power motor. This motor will consume about sixty gallons of gasoline an hour, and if run for ten hours a day will cost more than \$90 a day.

What Our Mechanical Progress Means.

MODERN progress is shown so forcefully in a recent article in the *Engineering Magazine* that this extract is worth using: "How futile it would be to attempt to do by manual labor the work performed by the steam engine! An ocean steamer of the *Lucania* class is propelled by a force of 30,000 horse-power. Counting six men to the horse-power and three shifts every twenty-four hours, the mere driving of the ship would call for 540,000 men, and if such a vessel could carry 10,000 men and their provisions it would be only one-fifty-fourth of the size necessary to carry its own motive power. Without steam our present ocean service could not be, nor could one of our passenger trains carry a sufficient number of human laborers to propel itself at present speeds and continued service, to say nothing of the freight."

The heat engine, steam, and its offspring—gas—are doing three-fourths of the world's work, and where the heat engine is the most used there is where the world is best civilized and where idleness, suffering and poverty are the least common, asserts the writer, who evidently classes hot-air engines with gas, as do many persons who class air-power with gas-power. The manufacturers of the United States make the best steam engines, the best gas engines and the best hot-air engines to be found anywhere in the world.

Our Trade with South Africa.—So far as South Africa is concerned, Mr. Chamberlain's scheme of a vast trade association of Great Britain and her colonies, as against all other countries, does not show much promise of success. The steamships sailing from New York last month carried even larger cargoes than usual. One vessel alone carried \$394,056 worth of our exports destined for East London and Delagoa Bay. In the list was very nearly everything produced in the United States, including canned foods, oils, machinery, provisions, tobacco, boots and shoes, notions and even milk. The list would fill a whole page of *THE AMERICAN EXPORTER*.

Our Trade with Spain.—Complete figures for 1903 show that with relation to American trade both the exportation from Malaga to and the importation from the United States have considerably increased. This is especially true of the imported American goods, a greater quantity and value of the latter having entered this port. The imports of American goods into Malaga show a steady increase in most of the leading articles.—*D. R. Birch, United States Consul, Malaga, Spain.*



Griffin Cleaner and Paste Combination

for Cleaning and Polishing Russet and Russia Leather Shoes and all Articles made of Russet and Russia Leather.

NOTE—Our Cleaner contains no Camphor.

Our Cleaner and Paste Combination for cleaning and polishing Russet and Russia Leather Shoes (and all articles made of Russet and Russia Leather) cannot be surpassed, if used according to directions.

The Cleaner cleans and removes stains, and the paste produces a brilliant, durable waterproof polish, which is not sticky or gummy. We also make it in different colors, ox blood and brown.

Price per gross, large size.....\$14.00
Price per gross, small size..... 7.50
Discount, 10 per cent.

Griffin Russet Leather Polishing Paste.



Our Russet Leather Paste for producing a high gloss on Russet and Brown Leather Shoes (and all articles made of Russet or Brown Leather) cannot be surpassed, if used according to directions. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and yet is not a varnish.

Excellent for vici kid.

We guarantee it not to injure the leather in the slightest degree, as it is free from acids, and will not soil the finest of fabrics.

If the shoe is dirty is should first be cleaned with Griffin Russet Leather Cleaner.

Price per gross, large size.....\$6.00
Price per gross, small size..... 3.50
Discount, 10 per cent.

Our Parisian Dressing.

A Black Dressing for Ladies' Shoes. Is considered by good judges to be the best and nicest put-up 10-cent dressing on the market.



We guarantee it not to contain anything injurious to the leather. It contains oil which helps to keep the leather soft and pliable. Packed in one and three dozen boxes.

Price, per gross, \$8.00.
Discount, 10 per cent.

Griffin Sterling Combination

Our Sterling Combination for dressing and producing a gloss on shoes made of Box-Calf, Cordovan, Vici Kid, French Enamel and all fine dry black leathers. Cannot be surpassed if used according to directions. It is easily applied, polishes quickly and easily; its lustre is brilliant, durable and not sticky or gummy and will not crack or scale off. It keeps the finest of leather soft. We guarantee it not to injure the leather in the slightest degree, as it contains no acid or other injurious substances.

A circular in each package giving full directions.



Price per gross, large size.....\$15.00
Price per gross, small size..... 8.00
Discount, 10 per cent.

Griffin Patent Leather Polishing Paste.



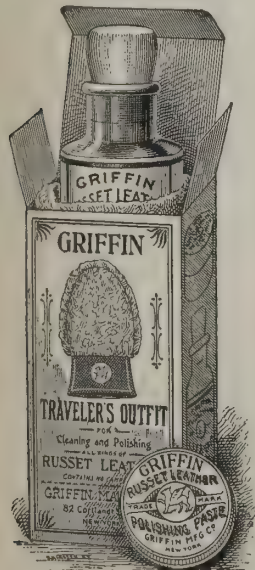
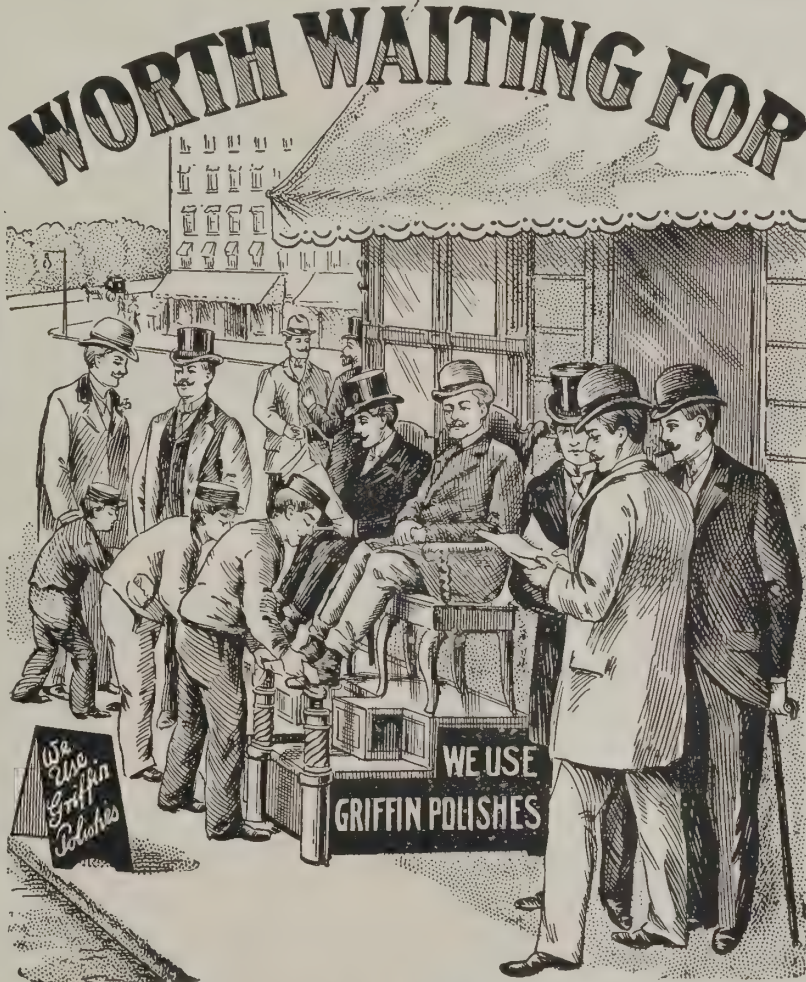
Our Patent Leather Paste for restoring the gloss to all articles made of Patent and Enamel Kid Leather cannot be surpassed. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and is not a varnish, as it leaves no coating.

We guarantee it not to injure the leather, as it is free from acids.

It is invaluable for brightening the saddle and blinders of harness, as the polish is waterproof.

Just the thing for manufacturers of harness to use, as it will prevent the Patent Leather parts from becoming dull.

Price per gross, large size.....\$6.00
Price per gross, small size..... 3.50
Discount, 10 per cent.



Griffin Russet Traveler's Outfit.

An excellent thing to take along when traveling. Contains a bottle of cleaner for cleaning and removing stains. A box of our polishing paste and a polishing mitten.

Price per gross.....\$18.00
Discount, 10 per cent.

GRIFFIN SNOW WHITE.



For cleaning and re-whitening white shoes made of canvas, suede and buckskin.

Price, per gross, \$10.00.
Discount, 10 per cent.

NONE BETTER MADE AT ANY PRICE.

Send us a trial order through any commission house in New York; above prices f. o. b. N. Y.

GRIFFIN

High-Grade Shoe Polishes.

GRIFFIN M'F'G CO.,

82 Cortlandt St.,

New York, U. S. A.



Griffin Sterling Traveler's Outfit.

For Box-Calf, Vici Kid, French Enamel and all dry Black Leathers.

Put up in a carton. Contains a bottle of Sterling Dressing, a box of Polishing Paste and polishing mitten. Also suitable for Enamel and Patent Leather.

Price per gross.....\$18.00
Discount, 10 per cent.

OUR NEW BIG BATTLESHIPS.

Novel Race Between Government and Private Concern in Building Two of Them.

NEVER before has there been such a contest of brain, brawn and machinery, even in combats at sea between warships, than is now going on in the United States in the work of building two great battleships for the American navy. These ships are exactly the same type, and each is to cost, approximately, \$4,000,000, the monsters to be completed within forty-five months. One ship, the Connecticut, is being built at the New York Navy Yard, under Government construction, while the sister ship, the Louisiana, is being built by a big private corporation. The test is really being made to find out whether the Government can build its ships better and quicker than private parties can do the work, or *vice versa*.

Naval Constructor Baxter, who has charge of building the Connecticut, recently talked about the contest. He deprecated the idea of rivalry, smiling as he did so, and then explained: "There is, properly speaking, no contest with the builders of the Louisiana; it is a race against time. We are, each of us, building what is designed to be a great battleship, and my task is to complete the Connecticut within the limit of both time and money set for the Newport News Company in building the Louisiana. It is merely a test of the navy yard—not one of other people.

"As to whether we shall win there is a grave question. We are making an uphill fight. The Government yards are at a disadvantage in competing with private concerns for several reasons. For one thing the private yards get ten hours' labor in a day for the same price that the Government pays for eight hours' work. There is, you see, a difference of something like 25 per cent. in favor of the private yards, in so far as labor is concerned. In addition, one must take into consideration the twenty holidays within a year when no work is done in Government yards, but for which, nevertheless, the men are fully paid. So much for labor.

"Regarding material, it is well known that the method of Government purchases is cumbersome. A private concern can buy at less cost almost all the material that goes toward the equipment of a battleship. So you must realize that we have a hard race to make. In the matter of time we are also at a disadvantage. When the fleet is at sea we can devote all our time to the Connecticut, but when the ships come in, demanding repairs, we are compelled to give them the preference, and then all work upon the big battleships is practically at a standstill."

The race at present, a trifle over a year from the start, shows the private concern leads with 40 per cent. finished on general construction, while the Navy Department has accomplished only 31 per cent. On the engines, however, the navy men reverse the figures, for they have 31 per cent. finished, while the private firm has accomplished only 20 per cent.

The naval constructor said: "It is accepted at present by naval experts that the battleships of a navy form its backbone, as it were. It was with this idea in mind that the planners of the Connecticut and Louisiana worked in forming their designs. Their idea was to combine armament with speed—to couple the speed of a cruiser with the strength of a battleship of the earlier type. The English navy has several ships of 16,000 tons' displacement, which is to be that of the Louisiana and Connecticut, but their batteries do not equal those which will be placed on our vessels. One feature of importance in our batteries is the submerged torpedo tube.

The Connecticut and Louisiana will each be equipped with four of these. In the old type of battleship the torpedo tubes were above the water line, but it was found that this construction rendered them more dangerous to the ships on which they were placed than to those of the enemy. In the event of a shot crashing through the comparatively vulnerable superstructure and striking a torpedo the ship undoubtedly would be blown to atoms. The present arrangement, however, makes such a disaster all but impossible, for a shot that strikes a ship below the water line does little or no damage. The submerged tube discharges the torpedo into the water from below the line, and all the apparatus and explosive matter in connection with the tube is stored in the depths of the ship.

"Some idea of the immensity of a battleship may be formed from the fact that we already have placed 7,500,000 pounds of metal in her, although the mere shell is barely completed. The total displacement of 16,000 tons includes the weight of the ship when everything is in place—the guns, armor, engines, coal and incidental furnishings. It is difficult to give an adequate idea of the tremendous power for destruction of such a vessel when hurled forward by the momentum of her engines upon an adversary.

"The two ships are each to be 450 feet long on the load water line, with an extreme breadth of 76 feet 10 inches. Each is to have twin-screw vertical expansion engines, and yet one may be faster than the other by several knots and immeasurably superior in a heavy sea. The utmost skill of the best mechanic cannot produce perfectly identical results. So far as we have gone, the most efficient fighting machine is the battleship of the type represented by the Connecticut and the Louisiana.

"On this steel shell, which represents the ship proper, the armor will be buckled from the water line. It will vary in thickness. Over the more vital parts it will measure 11 inches. In other portions it will be 9 and in still others 4 inches thick. The barbettes will be incased in armor 10 inches thick for the heavier guns and 6 to 4 inches for the smaller ones. There will be two military masts and three funnels. We are supposed to give her a speed of better than 18 knots, and the indicated horse-power is 16,500.

"The battery of the Connecticut is to be one of the heaviest in existence. In the bow and stern turrets the four 12-inch guns will be placed—two in each. To the port and starboard of these will be the turrets for the 8-inch guns—four turrets in all, and two guns in each. Disposed at points between the 8-inch turrets will be the twelve guns of 7-inch bore—something new in the armament of our ships. The secondary battery will include twenty rapid-fire guns of 3-inch bore, twelve semi-automatic 3-pounders and eight automatic 1-pounders. With the four submarine tubes the Connecticut will be able to give any ship afloat a very unpleasant quarter of hour."

The mean draught of the ships will be 24 feet 6 inches and the coal supply 900 tons. Twenty-six feet 9 inches is to be the maximum draught, and if a shot should pierce the hull beneath the water line, a layer of cornpith, placed between the outer and inner shells, will swell and effectually stop the leak. Each ship's complement will include 42 officers and 761 men.

American Progress in Labor-Saving Machines.

ROBERT W. HUNT contributed to the *Engineering Magazine* recently a wonderfully interesting and comprehensive article about "The World's Great Labor-Savers and Labor-Servers," in which he described in detail what has been done, particularly in America, in the direction covered by the caption of his article, which fills more than thirty pages of the magazine. The following extracts are worth reading, as is indeed the entire article:

"It certainly is an inherent quality of the human mind to seek the lightening of whatever manual labor the environment of habitation may require. This has been manifested in all known ages, and the discovered relics of prehistoric man point to the same fact. And it is notable that either the development of these labor-saving devices has brought about an equal elevation of human condition, or else such bettered conditions have demanded, and hence commanded, the devices. At all events they have practically gone together.

"It needs no argument to prove that the physical, moral and mental condition of the tiller of the soil in all civilized countries is far in advance of that of the same class in past generations, and in no occupation has there been greater development of labor-saving machinery. The man preparing the soil for the receipt of grain by the use of a sulky plow has to be a higher organism than he who scratched the ground's surface with a bent stick, or even a grubbing hoe. And the rate of development of the man has been equal with that of the tools used by him. So it has been in all the occupations of life."

To write of them all, says Mr. Hunt, would fill an encyclopedia, and he confines himself to the development of labor-saving machinery in the making of iron and steel. In that industry it has been remarkable both in rapidity and results. Says Mr. Hunt: "In fact, iron and steel may be considered as the foundation stones upon which the edifice of civilization rests. Their development and growth have made all else possible."

In conclusion the writer says: "Comparison of the general condition of the inhabitants of the United States at the beginning of the period covered by my narrative, during that period and now, will demonstrate that there has been a progressive improvement, and that the standard of living has been raised. If the spirit of unrest has also increased it is because the people have learned to want more, because it has become possible to have more."

It may be added that such of our readers as are interested in a historical narrative of the matters here referred to will find it well worth the trouble to procure a copy of the *Engineering Magazine* containing this article.

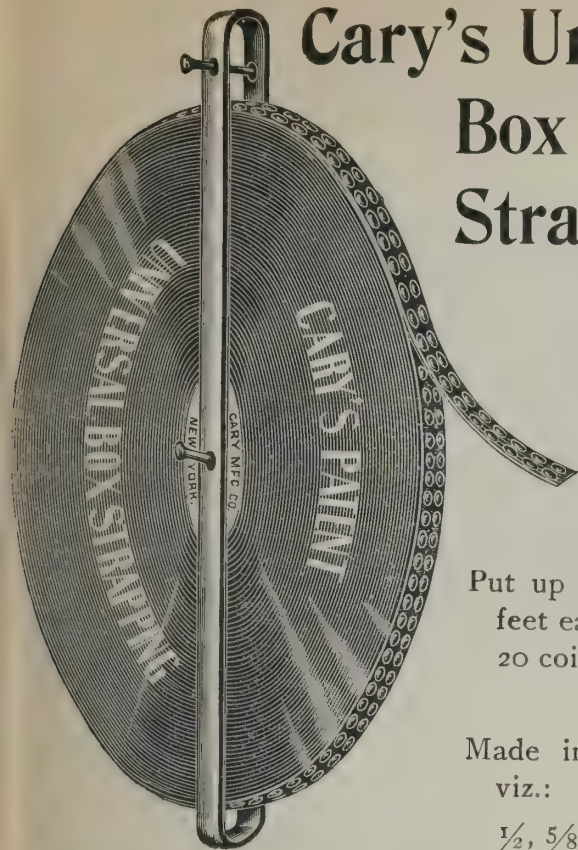
Operating Gas Engines with Wood Gas.

VARIOUS attempts have been made to produce power in many forms, some of which have been successful, but none more interesting than the application of wood gas to gas engines. The last issue of *Power* gives some account of an extensive plant of this sort, from which we make these extracts. The gas for eight engines is supplied from two sets of producers, each set consisting of two producers and one boiler. At first these producers were fed with bituminous coal and the producer and water gases, generated intermittently, were delivered in the first case to a 15,000-cubic-foot holder and in the second to a 5,000-cubic-foot holder. It was not until some time after the plant had been running that the trials of making gas from wood fuel were made. The results of these trials were that they are now using wood exclusively, and instead of making producer and water gas separately they are injecting steam with the air in the producer and producing a mixed gas whose quality does not vary much, as the condition of the fires can be kept nearly constant. The gas produced has about the same calorific power as that produced by the use of coal, and with proper management is surprisingly free from tar and partially condensable distillates which are injurious to the engines.

The operation of the engines on wood gas has been most satisfactory; the parallel operation of the generators with good results and the infrequency of shutdowns and repairs have been a noticeable feature. A test showed a consumption of only 2.97 pounds of wood per brake horse-power per hour.

This plant is the first of large size which has come to our notice in which wood has been used as fuel for producing power gas for gas engines. The success which attends its use in this plant and the economy of fuel obtained in the regular operation of the engines open up great possibilities for the economic generation of power in plants in which the conditions are the same as in this one, and indeed in any plant.

Cary's Universal Box Strapping.



Made of Soft Steel through which nails can be easily driven.

Put up in coils of 300 feet each and packed 20 coils in a case.

Made in four widths, viz.:

$\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$ and 1 inch.

Patented in all countries.

Packed very securely for export.

CARY MFG. CO. 19 & 21 Roosevelt St., New York.

Cable Address: "CARLEIO."

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The Universal (Tipless) Lamp



REPRESENTS THE HIGHEST ACHIEVEMENT IN LAMP MAKING
ALL VOLTAGES, CANDLE-POWERS AND BASES

THE BRILLIANT ELECTRIC COMPANY, Cleveland, Ohio, U.S.A.

MICHAEL'S LAWN SPECIALTIES

Have been on the market over 46 years,
and have successfully stood the test of time.

Our Motto Is: **QUALITY** in Every Instance.



Michael's Lawn Settees and Folding Chairs.

Our Lawn Settees and Folding Chairs are the most practical ever placed upon the market. The curve in back is exactly right. Painted red or green, or natural hardwood finish. Six 5-foot Settees, crated, containing about 25 cubic feet; weight, 96 lbs.

Price, per dozen.....\$18.00

Six Folding Chairs, crated, containing about 14 cubic feet; weight, 30 lbs.

Price, per dozen.....\$6.00



Michael's Folding Rocker.

Is the neatest and best article ever placed before the people. Folds as shown in cut. Painted red or green, or natural wood finish.

Six Folding Rockers, crated, containing about 14 cubic feet; weight, 48 lbs.

Price, per dozen.....\$9.00



New Michael Lawn Swing.

For grace, solidity and beauty the New Michael Four-Passenger Adult Lawn Swing has no equal. All parts are bolted or screwed. We use no nails except in chair slats. No tools required in setting up. We guarantee the New Michael Four-Passenger Adult Lawn Swing to be the best made. Opens and closes like a jack-knife. Contains about 20 cubic feet each, and weighs, each, 150 lbs.

Price, per half dozen.....\$30.50

NOTE.—The prices above quoted are f. o. b. New York City.

We also make the Michael Porch and Lawn Reclining Chair.

C. H. MICHAEL MFG. COMPANY,

Cable Address, "Michael." Western Union Code.

LA PORTE,

INDIANA, U. S. A.

AMERICAN SUBMARINES.

Progress Made in America in Constructing Safe and Efficient Vessels of This Type.

THE advances made in submarine navigation will unquestionably have a potent effect upon the peace and prosperity of the world. The subject is a fascinating one for everybody, and the important part the submarine is to play in the stability of international trade makes some account of the exploits and possibilities of the newest United States submarine torpedo-boat worth reprinting from the New York *American*. The boat is named the Protector, and her tests have been made at the Government station at Newport, on the Atlantic Ocean coast. With three men on board she sank in thirty feet of water and began to travel up and down, backward and forward, on wheels along the bottom of the sea in search of the cable which the Protector had been commissioned to find and cut. Within a very few minutes the cable was found and hauled up into a compressed air compartment, the door of which stood wide open, although the boat was completely submerged. Inside the compressed air compartment stood the members of the crew. Instead of cutting or tapping the cable, as they would have done in time of war, they tied a piece of rubber hose and an incandescent lamp globe to the cable as proof of the success of their errand. The cable was restored to its resting place along the seabed, and the crew prepared dinner and served it, and then brought their boat to the surface near the shore, after being down for four hours.

In a previous test two members of the crew, one in a diving suit and the other wearing a bathing suit, stepped out of the Protector's side door, 45 feet below the surface. The diver walked leisurely away from the strange craft, sat down on a piece of wreckage and began a telephone conversation with the Protector's captain. Inside his diving helmet was a telephonic transmitter and repeater, connected by wire with one of the regulation telephones to be seen in every American business office inside the compressed air compartment of the submarine boat.

The other man in the bathing suit rose to the surface like a cork and struck out for shore, to show that in case the boat was totally disabled under water it would still be possible for the crew to escape by way of the door in the compressed air compartment.

The Protector, in view of her remarkable characteristics and performances under water, has been pronounced the most deadly and dangerous and at the same time the most useful war craft ever constructed. She can travel along for miles and miles 150 feet under water, seeing and yet not being seen, cutting and tapping cables, planting or removing submarine torpedoes and mines, locating the enemy's ships and successfully launching torpedoes against them without giving the enemy the faintest clew to her whereabouts.

For war service the Protector will carry a crew of six men. Her two 125-horse-power gasoline engines supplemented by electric motor power send her through the water at a tremendous clip in search of the advancing ships of the enemy. The conning tower is the best place to be in for making observations while cruising along on the surface in this way. But when the enemy's ships are supposed to be not more than twenty miles away the captain of the Protector prepares to make his strange little craft as inconspicuous as possible. This he does by opening valves and allowing the water to flow into the hull through two grated holes on the side. This causes the boat to settle down lower and lower in the water, until finally nothing remains visible above the surface but the conning tower.

Still the captain is not satisfied. The conning tower might be observed by a lookout armed with a powerful telescope on one of the ships of the enemy. He lets water into the main central ballast tanks and the other ballast tanks, if necessary, till the conning tower has dipped down and nothing remains above the water but the sighting hood.

This sighting hood contains an omniscope, something like the old-fashioned camera-obscura, equipped with lenses and a mirror-like arrangement, whereby the entire surface of the sea for miles and miles on all sides around is reflected in miniature on a table or ground glass in the conning tower. By watching the reflected picture on the table he can instantly detect any ships that may come within range of the omniscope. It is not necessary to raise the Protector above the surface of the water to see the ships and locate them. The omniscope will do all of that.

The *American's* story describes an imaginary battle in which the Protector does great service, but as to that we have not the space to reprint it. The most interesting feature, in view of the disaster to the British submarine A1, is given below:

"The forward or diving compartment is, of course, the most interesting and spectacular feature of the boat, because it presents the amazing possibility of leaving a submerged craft by opening a door in the side, and without any danger of the water rushing in and filling the boat. This compartment is separated from the crew space by an air and water tight bulkhead and by an air-lock 42 inches long, built into this bulkhead and fitted with air and water tight doors, the whole being designed to withstand a pressure of 75 pounds to the square inch. The diving compartment is fitted with a connection to the low-pressure air system, a telephone and a gauge with two hands, one of which registers the pressure due to depth of water and the other the air pressure within the compartment.

"In the bottom of the compartment, forming a portion of the hull, is a cast iron door, hinged at its after end and stiffened with transverse ribs,

which, when the door is open, serve as steps. The door is raised by small hand-winches with wire rope falls and secured with dogs.

"To open the diving door, when resting or running along the bottom of the sea, the air-lock doors being closed, a valve on the air connection is opened and the pressure in the compartment allowed to increase gradually until the two hands on the gauges balance. A try-cock in the door is opened and the balance of the pressure is verified. The door is then undogged and allowed to swing open, giving, in clear water, a view of the bottom.

"The man who is to step out of the submerged boat has already put on his diving suit, fitted with telephone connection. The air-hose is connected with a low-pressure air-tank in the compartment, the pressure being controlled by the diver through a valve in his helmet. In this way he will be well supplied with air and will be in constant communication by telephone with the other members of the crew on board.

"The wheels on which the boat runs along the bottom are of cast iron 34 inches in diameter and with 10-inch steel rims. They are hung from steel jaws and are 'housed' when not in use in pockets in the boat's hull."

Automobile Torpedoes in Modern Warfare.

BUSINESS men throughout the world do not devote much time to reading or thinking about torpedoes in warfare, so that an article on the subject by Hudson Maxim, the American inventor, published recently in the *Woman's Home Companion*, may afford some information that is worth knowing in reading accounts of the war between Japan and Russia. Mr. Maxim says: "The modern Whitehead torpedo, generally known as the automobile torpedo, because it is self-propelling, may perhaps just be considered the most wonderful of all modern weapons. This torpedo consists of a strong steel cylinder somewhat in the form of a cigar, being about 18 inches in diameter and about 18 feet in length. It carries in its front end a charge of about 200 pounds of high explosive, provided with a percussion fuse, by which it is exploded when it strikes the side of a warship. The main body of the cylinder is filled with compressed air, forced in by powerful air-pumps, until a pressure of 1,500 pounds to the square inch is attained. Immediately rearward of the air-chamber is the driving mechanism, which is run by the compressed air which in turn drives the propellers for forcing the torpedo through the water. A rudder is provided for keeping the torpedo on a straight course. A gyroscope is employed for operating the steering mechanism, and this device is one of the most ingenious known to modern science. The least deviation from the straight course is instantly corrected, and the torpedo travels through the water as straight as an arrow. The compressed air, of course, is soon exhausted, but it will last for about one minute, and drive the torpedo in that time a distance of about half a mile. In other words, the speed of the torpedo is about half a mile a minute."

Mr. Maxim has invented a new system of propelling automobile torpedoes by which a material called motorite, somewhat resembling smokeless gun powder, is employed instead of compressed air for furnishing the motive power. The motorite is used as a fuel, by which water is evaporated and steam made, which drives the engine of the torpedo. Motorite provides more than double the power that the compressed air is capable of giving for an equivalent length of time, and it is expected that this torpedo will have a speed even greater than the swiftest cruiser or torpedo-boat destroyer.

Blazing the Way for Our Thrashing Machines.

UNITED STATES CONSUL G. BIE RAVNDAL, at Beirut, Syria, tells of the invasion of that country by American agricultural machinery. "The machinery," he says, "was a modern steam thrashing rig, the second of its kind that ever came to these shores. Its recent 'triumphal march' through Damascus stirred the White City of the East from center to circumference. On its way into the country it broke down bridges innumerable, but pulled itself and train out of the creek beds beautifully, and it has the honor of being started on its pioneer career in the presence of the Governor-General of the Province, the field marshal in command of the Fifth Army Corps and many other gentlemen of high station in Ottoman civil and military life.

"With its self-feeder, automatic bagger, straw-bruiser, etc., it is a marvel of ingenuity, and its service to this country, in blazing the way for labor-saving machinery, with its accompanying amelioration of industrial and social conditions, in a region east of Mount Hermon, where people live and work as did their forefathers when Abraham crossed their pastures with his Chaldean flocks, is beyond estimation."

Our Trade with Southwest England.—United States Consul Stephen Plymouth, England, reports that American apples have a large and regular sale in quantities of 200 barrels and upward. The supply shipped into his district does not equal the demand. American vehicles are being sold in large numbers than formerly. American footwear has its share of trade. Proprietors of the American shoe stores in this city inform me that their sales were never larger than in the past year.

Cotton Machinery in Paraguay.—Paraguay has gone extensively into raising cotton, and it would be well for American manufacturers of cotton machinery, etc., to keep this field in view and send catalogues and prices to this consulate to be given to inquirers.—*John N. Ruffin, Asuncion, Paraguay.*

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

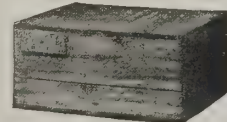


"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



SIX-SECTION CASE.



Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warehouses and on shipboard.

Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

*Base Section
List, \$2.65



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 3/4 cubic feet. This cut represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/2 inches deep and 32 1/2 inches long. Made of selected quarter-sawn oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warehouses, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.

ALLIS-CHALMERS CO., CHICAGO, U.S.A.

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533 Salisbury House.

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MANUFACTURERS OF

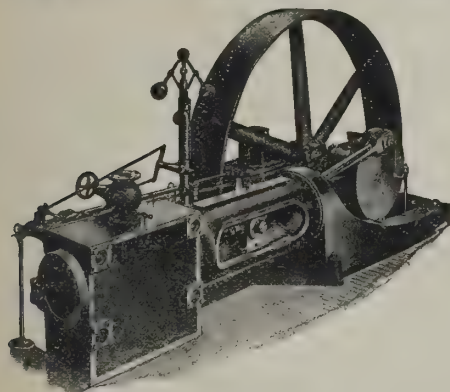
Mining Machinery OF EVERY DESCRIPTION.

SOLE BUILDERS OF

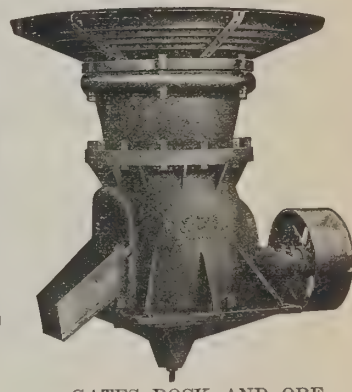
GATES ROCK AND ORE BREAKERS.

Pumping, Blowing and Hoisting Engines,
Air Compressors.

REYNOLDS CORLISS ENGINES FOR ALL POWER PURPOSES.



REYNOLDS CORLISS ENGINES
for All Power Purposes.



GATES ROCK AND ORE
BREAKER.

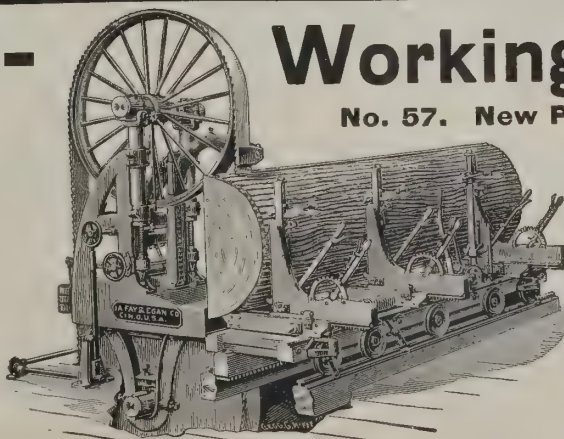
New Wood-

Machinery for all purposes of cutting wood, for the smallest blacksmith and wheelwright shop to the largest carshop and shipyard.

Single tools or entire equipments furnished with facility and expedition.

All woodworkers interested in this machinery are invited to write us for particulars of some of the new tools we have just built, which are especially designed for helping them in their work. New catalogue free. Send for sander book and pamphlet on the care of band saws.

We correspond in Spanish.



Working Machinery

No. 57. New Patent Band-Saw Mill.

One of the finest Pony Band Mills for hard and soft wood ever built. We have given special attention to band-saw machinery, and have been eminently successful in its production. We have our band-sawing machines in use all over the world, and letters from users praise their merits in the highest terms. The one here shown has all the features and mechanical improvements that could be offered through our long experience in building this class of machinery.

J. A. FAY & EGAN CO., 164-184 W. Front St., Cincinnati, Ohio, U. S. A.

American Electric Dress on Russian Ships.

DAZZLING displays of electric dressing have been made by the warships of many nations and such attire is now almost indispensable as a part of the equipment of a war vessel of the first class. Five years ago American electricians decked out the Russian Imperial cruiser Variag in the finest style and they have felt a sentimental interest in this splendid product of American workmanship. One of these electricians recently showed a photograph of the vessel in gala attire. He said: "Very beautiful the cruiser looked, on the night when she posed for her picture, lying peacefully in the shining waters of the Delaware River, aglow with her myriad lights that made her seem like a fairy ship afloat on the bosom of a liquid mirror of dappled light and shade. So, too, the Retvizan, that other staunch Russian cruiser, built in America, when, two years later, she lay at the same point in the river, her decorative lights all flashing out brilliantly, at parade rest under the eye of the camera.

"Both the Retvizan and the Variag carried a decorative electrical equipment that was among the prettiest and most elaborate on any of the world's warships. In this respect they were to be the 'show ships' of the Russian navy. It had remained for an American to give the Czar a sample of decorative idea which was comparatively new to certain foreign nations, although it had long ceased to be an innovation in the United States navy. Both of the cruisers carried with them when they left American waters neatly framed photographs, taken at night by a representative of the firm, as souvenirs of the occasions when they lay in the peaceful Delaware River, the cynosures of dazzled and admiring eyes on shore. What a sight it would be if one of these cruisers, ablaze as then, could be brought a captive into a port of Japan!

"It isn't often that one sees a picture of a warship in the full panoply of the electrical adornment. This is partly because it is difficult to take a photograph of this sort and partly because it is only on gala and comparatively rare occasions that the ships possessing such equipment display it. It is a sight that is interesting, as well as beautiful, contrasting somewhat tragically, in the case of these two Russian cruisers, with the grim and actual business of war.

"It was in February, 1902, that the American company delivered the electrical decoration equipment on board the Retvizan. The outfit consisted of a dressing line, outlining the gunnels, water line, forward and aft turrets, stacks and spars; the imperial monogram and crown, the name of the cruiser in Russian letters on the after turret and the Russian flag, all in sixteen-candle power electric lamp. The crown and flag were in three colors. On the dressing line the lamps were strung at distances of three feet along 3,146 feet of twin flexible conducting cable. The total cost of the work was nearly \$5,000. On the Variag, which was equipped in August, 1900, the cost was somewhat less, as she is a smaller boat. The general style of decoration on the two cruisers was practically identical."

As in other features of naval equipment, the United States has led the world in the electrical decoration of warships. Twenty-six of our naval vessels have been fitted out by the electrical company alone.

American Workshops and Industrial Schemes.

IN a recent issue our British contemporary, the *Manchester Guardian*, reports at length a lecture delivered by Hans Renold, an engineer, who has been inspecting American workshops. Mr. Renold was enthusiastic about his visit to America. He declared that the "American workshops were better heated in winter and better ventilated in summer than the British, with the result that the comfort and convenience of the workmen were increased and more work was done." He added: "There is no doubt that in American workshops there is an absence of the griminess which we all feel in Manchester." Another lecture in the series was by Prof. M. E. Sadler. It was on "Learning Through Doing Things," and was based on a visit made by Mr. Sadler to Tuskegee, U. S. A. But it was not confined to Tuskegee. It embraced American schools in general, and according to the *Guardian* report, Professor Sadler predicted a great artistic movement in this country.

"The American schools," he said, "appear to work in an atmosphere in which there is a greater combination of the artistic with the practical than in England;" "and in this connection," continues the report, "he spoke of the probable development of a great artistic movement, and said that if this did not come about the work in the elementary schools would be largely responsible for it."

Is Great Britain Losing Her Colonial Trade?

WR. HOLLOWAY, United States Consul-General at Halifax, Nova Scotia, sends the following, which is of more than passing interest:

"A report has been received here of a lecture delivered in London by Mr. W. A. S. Dewins, secretary of the tariff commission, in which he claimed that, taking the whole of the British possessions in groups, the same movement had been observed in each instance—the percentage of British trade diminished in comparison with the foreign trade of the colonies. The diminution, he said, had been greatest in the case of Canada, where the United States has taken the place of Great Britain. The same movement had occurred in Australia, and though the mother country still had a firm hold of the colonies in Africa the same movement had begun there also. 'Our present system,' he said, 'was practically based upon the assumption that in return for our manufactures we could get food at a cheaper rate.' He predicted that

twenty years hence the United States would require every bushel of wheat that country could grow. It might be said that Canada would take the place of the United States, but the effect of that on prices in England would depend on how Canada took its place. 'If, in Canada,' he said, 'they had a preference on corn it would stimulate agriculture; it would also stimulate a demand for other products in Canada which could be supplied from the mother country.'

Electricity Used in Place of Plumbers.

MANY of the readers of *THE AMERICAN EXPORTER* are never troubled with frozen water pipes, but our patrons are scattered all over the world, and we have some subscribers who live very close to perpetual snow, ice and everything else that comes with winter. In American cities at least for some years the water pipes have been laid under the point of frost interference, but there are many pipes which are not sufficiently beneath the surface to escape freezing when the frost is particularly aggressive. It was discovered in the American city of Newark during the winter just ended that electricity could be used to thaw the pipes, with less expense and none of the trouble that would be involved by calling in the plumbers. This account of it tells the story: "An electric current as an agent for thawing out frozen water pipes seems likely to oust the time-honored plumber from one of his regular functions. First, you call the electrician, maybe the same man who recently fixed your door bell for you. He arrives with a wagon bearing a dynamo and a connecting gasoline engine. Having attached the positive wire of his apparatus to a hydrant outside the house, he fastens the negative wire to the nearest faucet inside. The current, when the gasoline motor has been started, passes through the water pipe underground. Water is a good conductor, ice an insulator. When a current is impressed on an insulator or a bad conductor, heat results. So now the ice melts under the heat generated in the pipe, and soon the thawing is accomplished. In this way a main eight inches in diameter can be cleared within a few minutes."

Model Swinging Bridge to Be Built in America.

CONSTRUCTION on Duluth's "aerial ferry" is to be started soon. It is intended to be a model of what American mechanics can do in this field of endeavor. In the bridge, with its two towers on opposite sides of a canal, will be 650 tons of steel, and the whole structure is to cost \$100,000. A car will swing across from one tower to the other suspended from two idlers, one on each side on the bridge, operating over two idlers and over two drums, which form either side of the car, by two one-inch wire cables. These drums will be turned by electric motors. The towers will be 136 feet high from the water, and from center to center will afford a clear span of 393 feet.

The system has several advantages over a ferry or drawbridge. It leaves the channel clear at all times without requiring vessels to give any special signal or to modify their speed any more than in the case of a channel ferry. The difficulty of landing in case of storm, as with a ferry, is obviated, and all danger of turning turtle is done away with. The suspended car is to be capable of a load of 62½ tons. This will mean about one loaded street car, two or three teams, and altogether about 200 passengers. The car length will be 50 feet and width 40 feet. The cabins on two sides will be finished in curly birch, plate glass, and mirrors, and will resemble a modern steamship cabin.

Mr. Mosely on America's Public Schools.

MR. ALFRED MOSELY, the public spirited and enterprising Britisher, who discovered that this country is more progressive than Great Britain, has written an article for the *World's Work* in which he praises our public school system, and declares that he intends to send his two sons to this country to be educated. He says: "It was wonderful to see the raw peasant lad from Russia or Germany in a few months after landing sitting in an American school and singing 'My Country, 'Tis of Thee.' We saw hundreds of these who in a marvelously short time had caught the American spirit and who were daily saluting the flag, considering themselves part and parcel of the American nation. The teachers showed immense enthusiasm in teaching these little atoms of humanity, and the musical marchings in and out of school, the flag salutes, and the songs they taught the children were decidedly effective devices to engender discipline and patriotism. The same spirit is visible everywhere."

Refrigerating Machinery.—The York Manufacturing Company, of York, Pa., U. S. A., believes in performances instead of promises. It has just issued a booklet giving a list of its customers for the last year and expresses the belief that its references as given are the best evidence of the worth of ice-making and refrigerating machinery. Readers of *THE AMERICAN EXPORTER* can obtain copies of this booklet by addressing the company.

Wireless Work of War Vessel.—The United States cruiser Baltimore holds the record for long-distance wireless talk, so far as the Government is concerned. While 125 miles at sea, bound from New York to Norfolk, recently, wireless communication was opened at Norfolk, U. S. A.

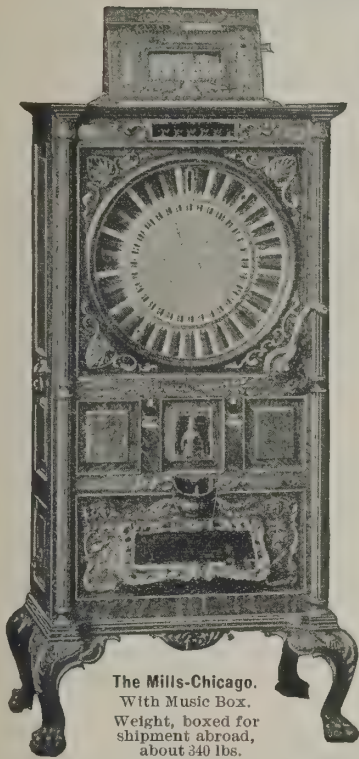
Hand-Blowers.—The Buffalo Forge Company, Buffalo, N. Y., U. S. A., has issued a pamphlet illustrating its new hand-blowers, which will be sent to any of our readers interested in this kind of machinery on request.

MILLS NOVELTY CO.

INCORPORATED.

CAPITAL, \$500,000.00.

CHICAGO, U. S. A.



Largest Manufacturers and Exporters
in the world of all kinds of

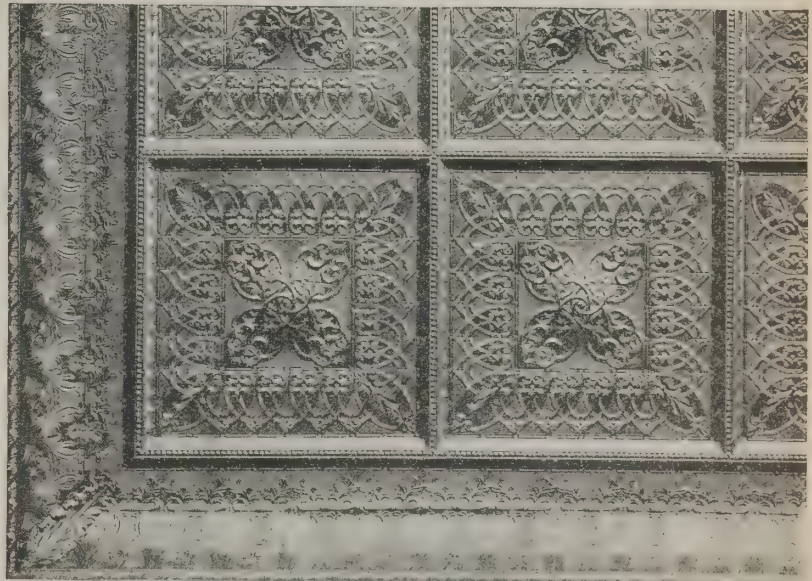
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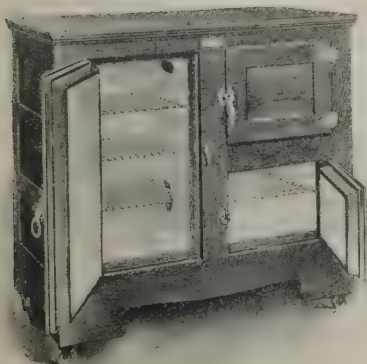
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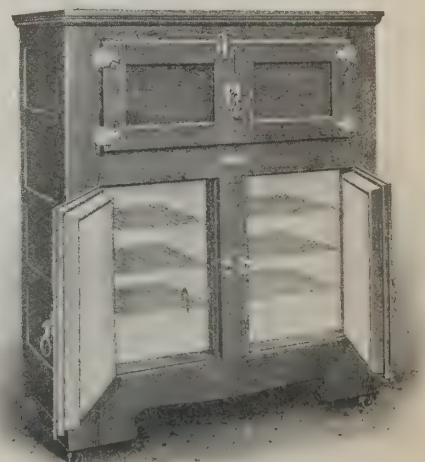
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MONROE REFRIGERATOR CO.,

Patentee and
Manufacturer,

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Important Improvements in Steam Turbines.

W. L. EMMETT, a prominent American engineer, at a recent meeting of the Engineers' Club, in Philadelphia, U. S. A., read an interesting paper on recent steam turbine developments in this country. The developments have consisted mainly in an improved design and operation of the valves and of the step-bearing of the main shaft, and lastly of the adoption of a four-stage instead of a two-stage machine.

In the first turbine installed for commercial operation at Newport, R. I., some minor difficulties were encountered, principally with the operation of the inlet valves covering the nozzles. This trouble has been corrected and an ingenious arrangement is now used to open and close these valves through the influence of the governor. The pilot valves are now operated by levers, rollers on the end of which rest on cams on a horizontal shaft, which is rotated by the governor. The valves are really operated by steam pressure, and the action is such that they are caused to move from an open to a closed position with a jump in somewhat the same manner as a pop safety-valve. This prohibits any throttling action to the steam, allowing full pressure at the throat of the nozzle and prevents any cutting of the valve seats and disks which might result from throttling.

The four-stage turbines contain four sets of nozzles, and each nozzle delivers the steam to one or more sets of buckets and guides. That there is a considerable advantage is brought out forcibly by remarkable figures obtained from a test of a four-stage turbine of 2,000 kilowatts capacity at the builders' plant.

The tests at a load of 2,400 kilowatts (400 kilowatts overload overrated capacity) gave a consumption of only 13.5 pounds, the best figure ever produced from a turbine unit and equaled by only a very few celebrated reciprocating engine performances. Assuming the very high over-all efficiency of 94 per cent., a steam engine would have to do an indicated horse-power on 9.46 pounds of steam per hour to equal this performance. Very few steam-engine sets can show an over-all efficiency of 94 per cent. At 90 per cent, a figure more common, but still high, the consumption would have to be 9.06 pounds per indicated horse-power per hour to equal the showing made by the turbine.

New Light on Reciprocal Engine Economy.

MANY articles have been recently published giving comparisons between the steam consumption of turbines and reciprocating engines, in which a relatively poor economy for reciprocating engines at light loads is assumed. This has led J. A. Seymour to contribute a timely and exhaustive article to *Power*, in which he points out that this assumption is unwarranted by the actual performance of these engines. Says Mr. Seymour: "Whatever advantages in actual commercial use the steam turbine may ultimately prove to possess, there are no indications at the present time that among these advantages will be a better sustained economy at light loads than with the reciprocating engine. It is true that 'the usual' or 'average' rate of steam consumption of reciprocating engines at light loads is excessive, as compared with the full load economy, but the usual or 'average' reciprocating engine is really an uneconomical and out-of-date machine. The ideal reciprocating engine working with non-conducting cylinder walls without loss from leakage, cylinder condensation or radiation should expand to back pressure to secure greatest economy. To expand to back pressure in an actual engine would load it much below its most economical point. It follows that since a modern engine of economical type, having a much lower rate of steam consumption at full load, approaches more nearly the ideal engine than the above-mentioned average engine, it should effect proportionately a still greater saving at light loads; that is, it should have a flatter economy curve. In actual practice this is found to be true."

Mr. Seymour goes into the subject extensively and gives diagrams and figures to sustain his contention.

Great American Inventor on Flying Machines.

EDISON'S eyes twinkle. His face laughs as he talks. His expression is as quick as the electric spark, and even when the theme is serious there is hidden merriment around his eyes and in the lines of his mouth. Edison's work is his pleasure, and, conversely, his pleasure is his work. The day is too short for him. The night is his paradise. Time, tide, etc., play no part in his habits. Nearing 60, he is as young as most men of 40. His clean-shaven, clear, almost transparent complexion heightens the illusion of youth, and his brisk, supple, graceful step bespeaks the fire of strong vitality in his blood. I am not a hero worshiper, but I have always found that men of power exhale a potential intellectuality. I was not doomed to disappointment on my recent visit to Mr. Edison at his laboratory at Orange, N. J., U. S. A. Upon that occasion I asked him to talk of aerial navigation, to tell me if the problem was approaching solution.

The click of the telegraph instrument could not have been quicker than his reply. "No," he said, "the time has not come for the production of an airship of use commercially—capable of making regular trips from a given place to a given place. One will never be built until a new motive power is produced."

"Would that motive power be found in some form of electricity?"

"I cannot say," he replied to the question. "No man can say that. A new motive power will alone solve the problem, but how I think it should be

solved I will not say. I cannot discuss that. I have thought of it a great deal. I have experimented, I have built light motors, but I have not attempted to fly. The question is wholly and simply one of motive power—a power that is sufficient to combat the force of gravitation, the lack of buoyancy, and sustain itself above the earth.

"The airship must be of simple mechanism. No man can build a machine after the structure of a bird that will fly as a bird flies. The Creator alone did that. He built the bird wonderfully. I have thought of that question often. I have watched them by the hour. Their muscles are peculiarly constructed—all their bones are hollow. They are born 'flying machines.' Their whole body works in harmony. There is nothing mysterious about it, yet a machine built like a bird, if it were possible, could not stand the strain of air currents. A bird is dependent upon the currents—floats on the current. It doesn't soar until it is well up in the air. It flies instinctively."—*The Outing*.

Greater Demand for American Footwear.

SEVERAL American shoe manufacturers have of late turned their attention to the possibilities of further development of the export trade to South America. A gratifying measure of success is said to have rewarded the efforts of a few to introduce new lines of footwear in the countries south of the equator, with the result that other makers of shoes are likely to engage in similar enterprises. A few days ago a New York man left for South America with samples representing the output of fifty-four shoe factories in the United States. It is his intention to spend a couple of years in taking orders for shoes in that part of the world, although he may find it advisable to interrupt his labors by returning to select new samples. An exporter recently said: "In South America the demand for shoes made in the United States seems greater this year than ever before. One firm is introducing in South America lines of shoes that cost at wholesale \$3 to \$3.50 a pair. The cost of shipping and the duties must be added in figuring what is paid by the people who wear the shoes. These shoes are selling well in several countries, so that you will see that these people buy high-grade and expensive shoes."

Frank M. Bedell lately returned from a trip to some of the West Indian islands in the interest of shoe manufacturers. He said that so much progress has been made in Curaçoa that nearly all the shoes for men, women and children come from the United States. The only important exception is that some of the cheaper shoes for children are still imported from Spain, but that will not continue much longer. Mr. Bedell says that Porto Rico is now the same as a home market for the manufacturers of the United States, who have the advantage of the tariff laws. The natives, he says, are taking more and more strongly each year to American styles in shoes, and the more prosperous people buy the best grades that are made in the United States.

Quick Deliveries by Motor Wagons.

IN New York City recently fifteen commercial motor vehicles made a service test under the auspices of the Automobile Club of America. All performed the tasks set them with despatch and without disablement. The greatest distance traveled was 43½ miles by a delivery wagon, the most service stops made were 57 by a light delivery wagon, and the heaviest load carried in one trip was 9,600 pounds, besides the weight of four men, by a truck.

One of the best performances of the day was that by a gasoline wagon, which made fifty-seven deliveries of merchandise in the east side of the city. The distance traveled was 40½ miles, and the time, not including the time the wagon lay idle, was 9 hours and 55 minutes. Another wagon traveled 21 miles, with fifty-three deliveries, and a third covered 35½ miles, with seven deliveries, in 6 hours and 10 minutes.

The lightest machine in the test—a 500-pound affair—traveled 39 miles and made fifty-four deliveries in 9½ hours. A second machine required five minutes more to make fifty deliveries over 33 miles of territory. One truck carried 4,300 pounds of fish from the depot, making deliveries at the markets. The stops were 21, the mileage 32 and the time out 9 hours and 15 minutes.

Precautions Taken by American Exporters.

ONE of the most interesting features of the new plant now being erected by the B. F. Sturtevant Company, at Hyde Park, Mass., is an elaborate testing plate for its engines. With an output of a thousand engines or more per year this is the essential climax of a careful system of manufacture and testing. The plate, or more properly the plates, will be supported upon a series of heavy parallel walls, between which steam and exhaust pipes are carried, so that at almost any point in the entire area of the floor, measuring about 30 by 60 feet, steam and exhaust connections may be made to any engine. Testing facilities will be provided, and a transfer crane overhead will make it very simple to locate or remove the engines. The same crane will transport them to the packing department and thence load them directly upon cars which traverse the end of the building. The Sturtevant company, it will be observed, uses all the precautions that all American manufacturers engaged in the export trade do to make certain that their goods are perfect before they ship the same to their customers.

New Turbine Patent.—George Westinghouse, the American inventor, has taken out a patent for a vertical turbine in which the steam is admitted from below and sustains the weight of the revolving parts.

"St. Louis A. B. C. Bohemian."

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For Wooden Vessels' Bottoms, prevents
boring of worms and all marine growth.

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Bronze.



Excels on Every
Point.

Cheapest to Use in
the End.

TESTIMONIAL.

NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

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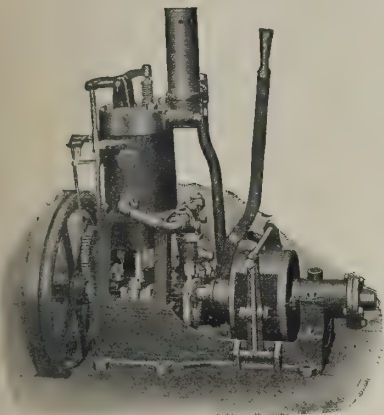
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Being Adopted
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Lozier 25-foot 5 H.-P. Launch.

We build Open, Half-Cabin or Full-Cabin Launches from 12 to 62 feet in length.

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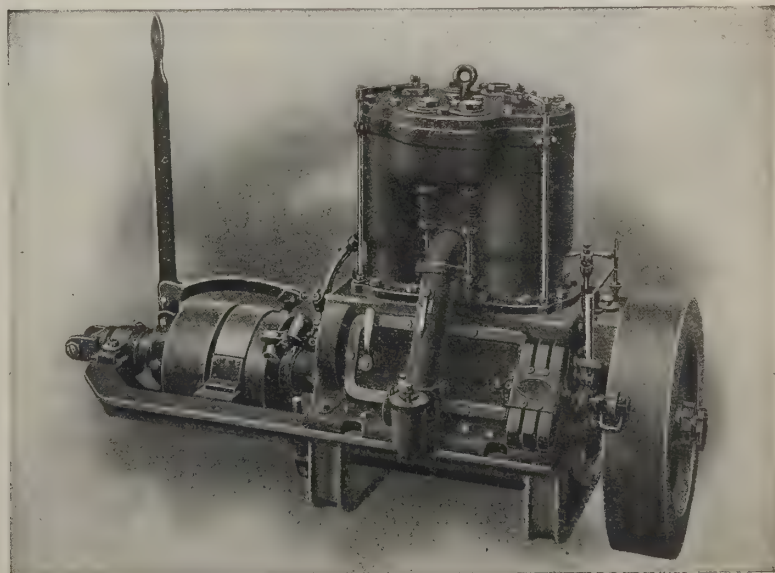
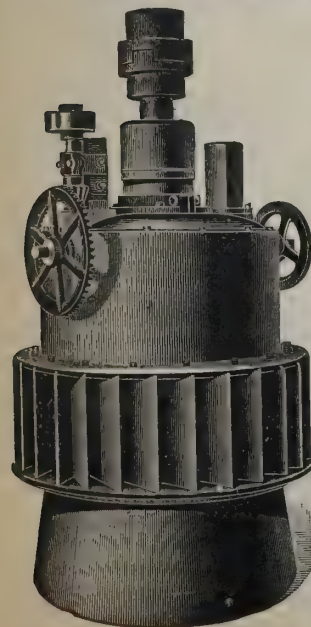
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Snow Locomotives with Enormous Power.

MOTORS for traction purposes are manufactured in America in great variety, and the use of electricity, steam and other power has increased to a remarkable degree. Most of these traction motors are of comparatively limited horse-power. In the American State of northern Michigan, however, one was constructed and operated last winter, which is really a giant of its kind. It is known in the lumbering region where it is used as a "snow locomotive," for the reason that it has been used principally during the winter season in hauling loads of logs through the woods to the sawmill. The motor represents no less than 200 horse-power, and is capable of hauling 100 tons of weight through snow-beds which range from 2 to 3 feet in depth and across a country where there is not even a footpath. Under these conditions the locomotive will attain a speed varying between three and four miles an hour, according to the condition of the surface over which it is moved. Tests upon a hard and fairly smooth surface, such as packed snow or ice, show that it will develop a speed of six miles an hour, yet hauling 150 tons.

This tractor differs radically in design from others which are utilized for hauling heavy weights. It was constructed after the plans of George T. Glover, of Chicago, its inventor, and possesses some peculiarly interesting features. One of these "snow locomotives" can be described to give an idea to our readers of the principle on which they are constructed and operated. It weighs twenty-five tons, but is attached to the runners in such a way that much of its weight can be shifted to bear directly upon what is known as the traction wheel. This portion of the engine is a hollow cylinder of boiler iron, and is provided with a series of three-cornered teeth, which are set in rows upon its face. Each is fastened to the wheel independently of the others, so that it can be quickly replaced if desired. The wheel moves upon a hinged frame which automatically raises and lowers it as it moves over the surface, adjusting it to the inequalities of the route, while the teeth, continually gripping the surface, furnish a tractive force which permits the engine to move where a motor of much greater horse-power would be unable to stir.

A curious feature of this traction wheel is that the hollow drum is connected with a steam pipe through which is discharged the exhaust steam. This keeps the drum heated to a high temperature, and as it comes in contact with the snow it rapidly melts the latter material, which, as it is packed down, makes a firm surface for the runners of the engine and the trucks which follow it. In this way the motor literally constructs its own roadbed. The drum is, naturally, built very heavily to withstand the hard usage it receives, the walls which support the teeth being $1\frac{1}{2}$ inches thick. It is 6 feet in diameter and weighs seven tons.

When additional tractive force is desired the weight of the engine is transferred to the drum by special apparatus. A powerful steam cylinder, called a "nigger," is so arranged that by merely pulling a throttle valve the engineer can operate it, with the result that the additional load is placed upon the drum almost instantly. The traction wheel is connected with the balance of the engine by gearing which represents three degrees of speed, and in this feature it resembles the ordinary pleasure automobile. The slow gear is used in starting the train in ascending grades and in places where the route is more than usually difficult. When the speed can be safely increased, the engineer uses what is called the fast clutch, which allows a rate of seven miles an hour if desired. By admitting more steam into the driving cylinders he can increase his speed accordingly. A rate of as high as twelve miles an hour has been attained by the locomotive with a light load.

Some portions of the forest where the snow locomotive has been in service are low and swampy, being partly covered with water in the spring, while in mild weather, in the winter season, the snow may cover the soft spots to a depth of several feet, thus offering little resistance. In fact, it would be impossible for a team of horses to pass over some of these spots without being "mired." Tests of the strength of the snow locomotive have been made by forcing it through this marsh land, and, with the aid of the traction wheel, the experiments have been successful. It has been used at the end of the winter season by substituting wheels for runners. Even where the surface is largely composed of sand, it develops such traction that it can be forced through this material while pulling loads varying from 50 to 100 tons. In fact, its performances seem almost incredible, considering the topography of the country.

Curiosities of Map-Making in America.

ALARGE number of models of cities, mines and buildings and relief maps for the St. Louis Exposition have been made by E. E. Howell, of Washington, who, according to the children of his neighborhood, keeps a "geology store." The making of one of these large relief maps, is an interesting operation. If ordered, for example, to furnish a relief map of the Yellowstone Park, the great American natural park, Mr. Howell would use as a guide a topographical map of that reservation, showing the contour of the country in lines, indicating heights or depths of 100 feet on the vertical scale. With this may he would proceed to cut out of pasteboard, the thickness of which would correspond to the one-eighth or one-tenth inch by which the 100-foot contour is shown on the map, that part of the Yellowstone Park representing the lowest part of its surface. This he would tack down on a wooden tray or table, forming the base of the relief map, after which he would cut out the next contour of the country, tacking it down in the place on the lowest one. Thus, taking the map as a pattern, he would cut out of pasteboard each level, until every hill and mountain and the entire surface of the

country would be built up and shown in successive terraces of pasteboard on the wooden platform or tray.

But in nature the face of the country is not always thus sharply outlined. Only in the Grand Cañon of the Colorado of the United States and the mesa country of Arizona are the successive levels marked by sheer cliffs and wall-like terraces, for the reason that the rainfall is not sufficient to round it off and give the region that aspect of gentle slopes and inclines seen in other parts of the world.

When the map has been fully built up in this way, therefore, one of the artists in Mr. Howell's employ takes charge of the work and covers the face of the country with modeler's composition, or patent clay, so that when finished it is a reproduction in miniature of the region which it is intended to represent. This is called the model, and from this model a cast is made in plaster of paris, which is affixed to a firm wooden base, painted in proper colors, and varnished.

One of the most difficult maps of this sort that Mr. Howell has completed for the Exposition was that of the Black Hills region of South Dakota. Those who have never visited that region have little idea what a jumble of hills and valleys it is. Looking at the relief map, one wonders how the early gold-diggers found their way in and out of the hills.

Frequently orders are given for maps in which cities, railroads and mines appear, and then the artists are obliged to construct miniature buildings out of pasteboard, tin, lead and wood, painting them the colors of the original. Mr. Howell is now filling an order for a relief map of St. Elizabeth Insane Asylum and another of Butte, Mont., and the Anaconda copper mine. That part of his shop in which these maps are being made looks like the Noah's Ark department of a toy factory.

The Lighting of the Future.

IN discussing the lighting of the future the *Electrical World and Engineer* says: "Of all known illuminants electric light is easily the first, from a hygienic standpoint, since the light is produced without sensible combustion. This virtue and its excellent color value conspire to give it a very strong hold on public favor, but as regards the former characteristic few people are willing to pay, when in good health, any considerable price for hygienic conditions, and as regards the latter, it is fully equaled, for instance, by acetylene. In the last resort, therefore, the battle of illuminants resolves itself into a contest for economy, modified only by the dictates of fashion and external appearances. At the present time electric lighting has the upper hand of its competitors, but it can retain it only by constant fighting. It has, of course, certain strongholds from which it cannot easily be driven.

"At the present time the electric arc is by a very perceptible amount the cheapest all-round illuminant, and this fact is the strongest ally of incandescent lighting. For while cheap gas in mantle-burners can undoubtedly beat out the incandescent lamp, candle for candle, in mere cost it cannot meet the arc on even terms, and if the consumer is deaf to all arguments based on hygiene and color-blind to boot, the central station still holds a trump card in the arc. The intensifying mantle-burners in their various forms can beat out the arc indoors, so far as price is concerned, but are at a disadvantage out of doors, and require some species of local plant which works to their disadvantage in the matter of convenience.

"Two things we need in electric lighting for the immediate future: One is a lamp of moderate power, moderate intrinsic brilliancy, good color and high economy to replace or supplement the present glow lamp. The other is a very efficient lamp of almost any power and brilliancy, with plenty of red and yellow in its spectrum, and capable of operating when fully inclosed and practically without attention."

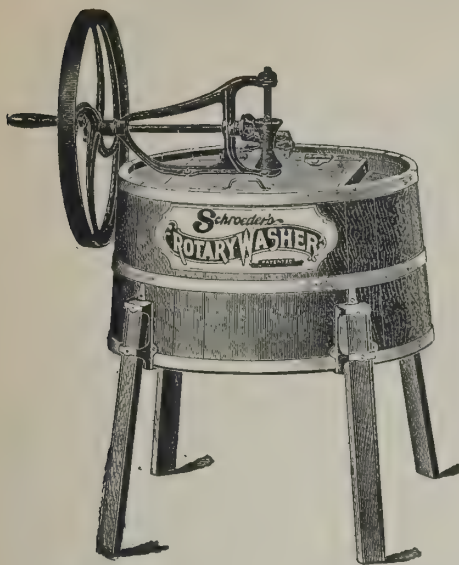
We do not entirely agree with our contemporary regarding the use of gas, for it is a well-known fact that American inventors have placed in successful operation some very satisfactory systems of improved illumination by gas, both for indoor and outdoor lighting. Some of these systems have been given great praise by persons who have used them in other countries.

Wire, Wire Nails and Pipe.—Exports of American wire nails and pipe in the month of March gained over the outgo for the previous month, as did other manufactures of this sort. Of wire it is interesting to note that South America was the most important customer, taking 1,115 tons. Europe received 850 tons, while to Australia shipments were made amounting to 811 tons. Mexico, South Africa and other purchasing centers received smaller quantities. The 2,000 tons of wire nails went chiefly to Europe and the Far East. The pipe exports went chiefly to Europe.

Our Trade with Colombia.—United States Consular Agent Granger, at Quibdo, the commercial center of the Choco district of Colombia, reports that the imports of that region are increasing, and adds: "The principal imports are mining and agricultural machinery, corrugated iron, barbed wire, kerosene, tools (including machetes and axes), provisions and dry goods, nearly all of which come from the United States."

German Officials Inspecting American Steel Plants.—Three prominent German Government officials are now on a tour of inspection of the big steel and other manufacturing plants in the United States. They are Herr Havenstein, president of the Royal Prussian Bank; Herr Doenhoff, privy counselor of the Department of Commerce, and Dr. Von Loehr, privy counselor of the Foreign Office.

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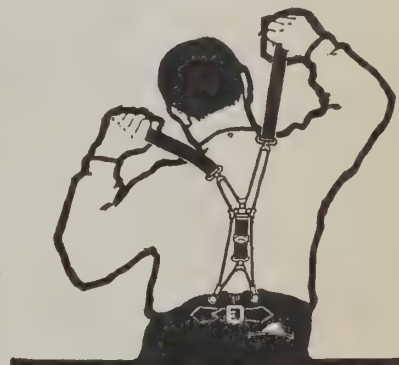
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Purity and Healthfulness
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The Handy Fruit and Vegetable Slicer

The most interesting kitchen utensil ever invented. It slices every kind of fruit or vegetable into an infinite variety of unique and fancy designs, making an entirely new, novel and delicious product.

Is invaluable for making delicate salads, garnishings, etc. Makes **Juliennes** ten times as fast as by the ordinary method and is the only utensil that will produce **Lattice Potatoes**. Is extremely simple to operate and sells rapidly wherever shown.

\$16.50 Upon receipt of **SIXTEEN** and **50-100 DOLLARS** **100** in U. S. Gold or its equivalent, we will deliver boxed, ready for steamer, F. O. B. cars New York, one gross [144] **No. 6 X SLICERS**, for Export only. Weight boxed, 120 lbs.

NOTE.—To facilitate our rapidly increasing export trade we desire to arrange with one responsible business house in each trade center of the world, to handle our **NO. 6 X SLICERS** and other specialties manufactured by us.

HANDY THINGS CO.,

Manufacturers,

LUDINGTON, 40 to 50 Rowe Street, MICHIGAN, U. S. A.



JULIENNES

LATTICE POTATOES

SCIENCE AND THE FARMERS.

Millions Spent That Will Benefit Foreign Soil Tillers, as Well as Americans.

WE have had frequent occasion to mention the effective work done by the United States Department of Agriculture in behalf of the farmers and other cultivators of almost everything outside of manufactures. Secretary Wilson, who is at the head of the department, wants the American Congress to let him spend \$240,000 more than usual in the ensuing year, and in his argument in behalf of the proposition presented such a comprehensive view of his own field that in its relation to American progress otherwise many of our readers will find his argument as summarized below of interest to them, it being borne in mind that the localities mentioned are all in the United States:

"By definite tests and work our Government scientists have relentlessly tested theories in the crucible of practice; have driven many fallacies out of the farmer's mind; have taught the farmer to know instead of to guess, and are establishing the great science of agriculture more firmly upon a body of ascertained and definite knowledge. Fifteen years ago it was a common farm practice to cook food for domestic animals. Millions of dollars were invested in appliances for this purpose. Several State experiment stations made exhaustive tests in feeding experiments to determine whether or not this practice was profitable. It was clearly proved that it did not pay, and to-day there is hardly a farmer in the United States who cooks food for his stock. By this one demonstration the experiment stations have saved more money to the farmers of the United States than their total cost since their original establishment. The irrigation experiments of the California station have resulted in the reclamation and use of hundreds of thousands, if not millions, of acres of alkali lands, and will result beyond any question in the profitable use of many millions more acres of those lands.

"The Minnesota station, in the development of new varieties of wheat, has materially benefited the entire wheat industry of the nation. The Illinois station, through the selection and breeding of corn, is not only increasing the corn yield, but is breeding into the grain itself a larger proportion of protein and making it a more valuable ration for both men and animals. The experiment stations of New England and the South, through their fertilizer tests, have pretty nearly driven useless and fraudulent fertilizers out of the American market, and have saved money enough to the farmers of the United States to pay all the agricultural appropriation bills of the United States Government for ten years. In every State the experiment stations are teaching farmers to stop waste upon the farm. They are demonstrating the value of good cows and good horses and good sheep. They are teaching intelligent swine husbandry. They are fighting by the best scientific means known the diseases which affect all farm animals. They are intelligently seeking to limit or stop the ravages of insects which damage or destroy farm crops. They are teaching the lessons of tillage, of manuring, of rotation of crops, of the proper construction of buildings, of the care of farm animals, the lessons of breeding, the care of milk, the profitable production of butter and cheese, the use of machinery, the value of drainage, the construction of silos and the renovation of soils. They are constantly testing new varieties of fruit, of grains and of grasses. There are 755 men engaged in the work of these stations. One-half of this number gives more or less instruction in the agricultural colleges. A large portion of them do some work in the farmers' institutes of the several States. Last year 810,000 farmers were registered as attending the meetings of the farmers' institutes. The information given by the experiment station workers is greatly sought by this large body of intelligent farmers, who make practical use of the knowledge which they receive. The value of agricultural experiment stations is recognized by every civilized nation. In view of the fact that agriculture is still our greatest interest, and that this Government is thoroughly committed to the policy of maintaining and developing that interest; in view of the fact that our agricultural production has increased from \$4,000,000,000 in 1887, when the experiment stations were established, to \$9,000,000,000 in 1900; in view of the fact that the appropriations to the Department of Agriculture have doubled in seven years to the very great benefit of our agricultural interest, and in view of the fact that the agricultural experiment stations have unquestionably added as much to the wealth of the United States as any educational force in the nation, it appears that the small additional increase in the appropriation to the experiment stations desired can very properly be given."

It ought to be added, without detracting from the credit due for the marvelously good work done by Secretary Wilson's department, that the American farmers owe as much, if not more, to the inventors and manufacturers of agricultural machinery than they do directly to the Government. Our manufacturers are indebted in a measure to the information which the department has given them, but they have responded more than promptly with new apparatus or machinery, when advisable, and with improvements upon old designs when such a course was necessary. In a word, our readers in other countries are put in the position of being able to obtain the same improved machinery for agricultural purposes that American farmers can secure, as the result of the expenditure of millions of dollars by the United States Government.

Must Want Our Machinery.—Full-page advertisements of American wood-working machinery in English timber trade journals indicate that there is something doing in that direction.—*The Woodworker.*

American Progressiveness Affects Gera.

UNITED STATES CONSULAR AGENT NEUER, at Gera, Germany, makes the following report: "As far as exports from this district to the United States are concerned, it is admitted on all sides that though there may be a partial improvement from time to time, the large quantities of former years will never be reached again. United States manufacturers are too progressive, and while the woolen dress goods industry there is as yet in its infancy it is turning out fabrics comparing most favorably with the best qualities made here, as becomes evident by the fact that many Gera makes have ceased to be articles of export. Besides, technical education in the United States is advancing at such rapid strides as to play already an important part in production."

Consular Agent Neuer quotes an article from a German newspaper, some portions of which are of international interest: "So far England has been one of the keenest rivals of Germany in the expansion of foreign trade. The United States has become, however, a dangerous competitor in the commercial race of nations, shown by her increasing trade with Canada. Even chemicals, an article hitherto almost monopolized by Germany in the world's markets, shows increased exports from the United States to the neighboring Dominion.

"A similar evidence is furnished by the Central and South American republics with which trade has been successfully built up and maintained for many years by German diligence, skill and perseverance, and in spite of English endeavors for superiority. United States enterprises in Mexico are increasing from day to day. Americans are building railroads and are engaged in mining. Machinery and supplies for mines come from the United States.

"The introduction of all kinds of machines into the Argentine Republic keeps pace with the development of this country, but it is especially the importation of United States thrashing and sewing machines, railway supplies, vehicles of all classes and manufactured goods in general which shows a material increase.

"In Bolivia, where Germany holds the first place in both imports and exports, and where Germans had almost exclusive control of trade generally, it is the United States which is beginning to make herself most seriously felt in commercial undertakings. A like tendency prevails with regard to commerce with Colombia, Haiti, Costa Rica, Guatemala, Venezuela, Brazil and Ecuador.

"But, aside from the American continent, increased efforts of the United States manufacturing and exporting interests are made in the Far East, and this with remarkable success. Since the occupation of Formosa by the Japanese larger exports to and imports from the parent country are to be observed, but the retrogression of German imports into Formosa is to be attributed in the main to American competition."

Old Methods Never Safe from Change.

KEEN perception of possibility for improvement was shown, according to a writer in *World's Work* for May, by an engineer who measures up to the usual American standard. This engineer was asked some years ago to visit a copper mine in northern Michigan and design some ore-crushing stamps. He accordingly went to the mines, where, for the first time in his life, he saw stamps at work. He found them reared on a huge foundation of spring timbers and rubber-sheeting, which was supposed to add to the efficiency of the stamps. His simple comment was: "If I were trying to crush rock I would not start to do it on a feather-bed."

He suggested that the spring timbers be replaced by a solid mass of iron, so that the blow of a stamp should wholly expend itself in crushing rock, and not largely in compressing an immense elastic mass with utter waste of power. Only at the end of two years did the company permit him to build such a stamp. It did just 60 per cent. more work than the old machinery. During forty years elastic cushions under every mining stamp in the world had been wasting almost one-half the applied energy. So it goes with the new spirit of improvement that has been so much in evidence in the last few years in the United States.

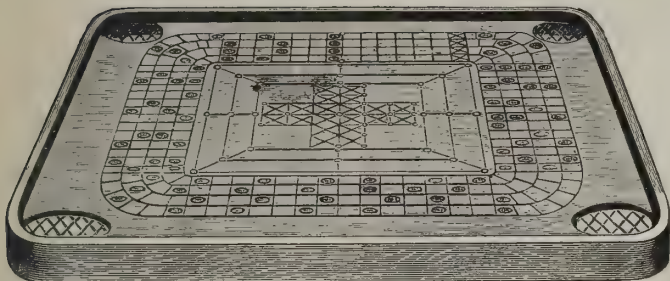
American Boots and Shoes in Denmark.

UNITED STATES CONSUL RAYMOND R. FRAZIER, at Copenhagen, reports that the American-made shoe is popular in Denmark.

Two of the foremost shoe stores in Copenhagen use the American shoe for a "leader" in their splendid show-window exhibits. Many stores display the American shoes conspicuously. One leading shoe store makes a specialty of American-made rubber footwear, including rubber boots of all sizes. The largest department store in the kingdom carries a full stock of American shoes (except patent leathers) and an especially good stock of women's and children's "storm rubbers." The climate in Denmark is moist. For nine-tenths of the year the sidewalks are wet with rain or snow practically all the time, but the wearing of rubbers, strange to say, is a comparatively recent custom. There is a promising future for American-made rubbers in this market.

Denmark is now the fifth best European customer of American boots and shoes, though five years ago the American shoe was practically unknown there. Since then our goods have come into more extensive use. The people of Denmark recognize good boots and shoes, and the exporters of the United States are reaping their share of benefit.

in English, Spanish, German or French accompanies each Game Board. PLEASE SPECIFY LANGUAGE DESIRED.



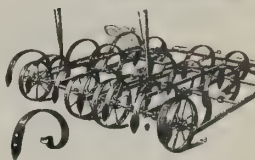
Price, per dozen,.....\$32.00.

NOTE.—Each Game Board measures twenty-nine (29) inches square (53.16 centimeters); one dozen Game Boards, boxed for export, weigh 206 pounds (96.4 kilos, 13.76 cubic feet (0.3896 cubic meters).

[illegible]

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South African Representative, A. G. ENOCK & Co., P. O. Box 471, Durban, Natal, and
P. O. Box 5062, Johannesburg.

TRADE MARK

An illustration of a roll of 'SMOOTH-ON' tape. The roll is shown partially unrolled, revealing a repeating diamond-shaped pattern. Each diamond contains the words 'SMOOTH-ON' in a bold, serif font, with 'TRADE MARK' written below it. The background of the tape has a fine, vertical ribbed texture. The roll is positioned on the left side of the frame, curving towards the right.

Smooth-On Cement Packing will withstand very high temperatures and pressures, and is used with success for gas engine cylinder heads, with water jackets. It is especially adapted for steam and hydraulic work. Gaskets that have been in use can be used again, with a thin coating of Smooth-On Cement No. 1 on the gasket to fill uneven places when necessary.

**SMOOTH-ON MFG. CO.,
JERSEY CITY, N. J., U. S. A.**

No. 60.

No. 60. 60 inches long; 36 inches wide; 52 inches high; weight 400 pounds
No. 61. 66 inches long; 36 inches wide; 52 inches high; weight 425 pounds

A SWELL FRONT desk of exceptional value to every desk user. Card index drawer with follow block attachment; private compartment with flat keyed spring lock; letter file complete; 11 pigeon-hole boxes, 9 inches deep. Special arrangement for stationery, memorandum books, etc. File boxes and card index drawer, trimmed with cast-brass holders and highly polished cast-brass knob pulls; all parts highly polished.

Special attention given to filling Export Orders. Send for Illustrated Catalogue and Export Price List. Order through buying and shipping agents, and send us duplicate of orders, so as to avoid mistakes.

Bottles Are Now Manufactured by Electricity.

PROBABLY nowhere is there to be found among all the vast manufacturing industries of the United States a process more interesting, yet less familiar, than that by which the enormous quantities of glass bottles are produced, says a writer in the *American Inventor*. But little consideration is given by the average person to how the innumerable commodities used for the furtherance of our welfare are secured, and probably no thought is given to the methods and appliances used and the vast armies of workmen employed in the production of the insignificant glass bottle. Great improvements have been made from time to time in the methods and appliances used in the production of this commodity, with a consequent reduction in price to the consumer, while at the same time improving the quality of the manufactured article.

The plant of a certain glass manufacturing concern, now the largest of its kind in the world, is, if we consider the methods and processes there adopted, representative of modern practice in pottery-making. This plant was founded in 1872 and the early efforts of the concern were so successful that they were encouraged to continue and expand, and the business has gradually grown from a one-furnace plant to an industry covering an area of fifty-two acres of ground.

Favorably situated with most excellent shipping facilities and cheap fuel, of which great quantities are required, it engages the service of 3,500 employees and produces over 1,000,000 gross of glass bottles per annum, ranging in size from one-sixteenth capacity to twenty gallons capacity, and in grade from the cheapest amber and green beer and patent medicine bottles to the highest grade of flint glass perfumery and pharmaceutical ware.

With the growth of the industry advance from old methods has been continuous. The old round type "pot" furnaces in which the raw materials were melted to the mixture of liquid glass in small "pots" have been supplanted with what is known as the "continuous furnace." These furnaces are designed to supply continuously a perfect mixture at a uniform temperature, this being one of the most rigid requirements for the production of perfect ware. The fuel used is producer gas, and the fires are never permitted to die during the working period of the year, which extends from September 1st to July 1st, the months of July and August being reserved for factory renovation and repair.

Until recently all bottles were "blown by hand" (to use a colloquial trade expression) in molds immediately adjoining the furnaces. Improvements in practice, however, have evolved a machine by which wide-mouthed bottles in all sizes are blown in the molds by compressed air. It was in connection with this work that electricity first entered the field in any other than an illuminating capacity, and by the adoption of steel plate fans driven directly by electric motors and installing one such unit in each factory, immediately adjacent to the work to be done, the power consumed per factory was reduced nearly 80 per cent, and the efficiency of the system very materially raised by affording a more uniform temperature to the molds and by supplying a quantity of fresh air about the workmen.

For blowing the machine glassware compressed air at a pressure of eighty-five pounds to the square inch is supplied by an electrically driven air compressor, having a capacity of nearly 1,000 cubic feet of free air per minute. The tops of the bottles are given a finishing touch after leaving the molds. This process consists in placing the bottles in proper receptacles with the upper end of the neck in an intensely hot gas flame. When heated to the proper temperature the tops are molded into shape by hand molds placed over them, while the bottles are at the same time rapidly revolved. There are other features of the process that we have not the space to print in detail.

Automobile the Cheaper.—If a man be willing to figure pleasure as interest on his money, he may, by investing a somewhat larger sum at the outset, maintain a small motor car for considerably less than he can keep a horse and carriage. The figures given show: Cost of horse and vehicle, \$450; cost of keeping, \$434. Cost of motor car, \$650; cost of maintaining, \$341. This gives an excess of \$200 in the first cost of the automobile and a saving of \$93 in the cost of maintenance. A gallon of gasoline will run a light motor car from 20 to 30 miles, but for the sake of being conservative estimate the fuel at five gallons for 100 miles and the average cost of it at 18 cents per gallon. This brings the operating expense to 90 cents per 100 miles.—*Everybody's Magazine*.

American Plows in Russia.—The year 1903 was a very satisfactory one for the sale of agricultural machines and implements in Russia. The American articles in this line continue to hold the field, and their number is increasing. Harvesters, binders, reapers, mowers, rakes, corn shellers, etc., have always been in favor in the country and their sale has been large. The American plow has now secured a permanent foothold in Russia, and its future promises to be a very satisfactory one.—*Farm Machinery*.

Increases Railroad Safety.—American railroad development has reached the point where a man can sit comfortably in a private car and see recorded on paper before him every imperfection of the rails over which he is riding. Twenty years ago, a track-walker with a hammer tramped the cross-ties to find out this same thing. The track-walker's work and much more is now done by the dynograph, a mechanism which not only records the deviations the rails make from a straight and level line but automatically computes these deviations in feet and inches.

Minister Oi Worked in American Factory.

AS a common, ordinary factory hand a high Japanese official gained knowledge and experience in the United States which has evidently been of incalculable value to him in his subsequent career.

"Away back in the early '80s," said a well-known electrician of the city of Pittsburg, U. S. A., recently, "there came to me with a letter of introduction from the president of the company a young Jap, and the note directed that he be given every opportunity to work in all the departments of the factory, so that he might be proficient in every branch. He was apt, willing, always wore a grin and remained at the place about two years."

The teller of the story found out during these two years that the boy had been working as a lineman before he appeared at the factory. His name was Oi. He went back to Japan, and only at Christmas time, by a present, was the electrical engineer reminded of him. Many years later the engineer was waited upon by three Japanese who wanted to know all about the very latest devices for telephones and telegraphs. They were electrical engineers and had been taught all they knew at the Imperial University in Tokio by a Prof. Oi, from whom they carried a letter of introduction to the engineer. They were Imperial Commissioners, and the engineer took them all over the country explaining things. The brightest of the three was called Wadachi and the others were Nakayama and Okonoto. They told their mentor that Oi was now Minister of Posts and Telegraphs in Japan, and this important position he now holds during war time.

One Secret of American Manufacturing Success.

IN Europe the idea is generally prevalent that, despite America's industrial success, the craftsman is disappearing in the United States. This may be true in those industries where he should disappear because of his former work being better accomplished in other ways; but in those industries where he should continue America stands at the head of all nations, for she possesses the best talent from all. In American manufacturing there is unquestionably carelessness in the use of raw materials, because they are generally cheap, while the highest possible efficiency is obtained from labor, because it is dear. In Europe the reverse is the case. Great economy is manifested in the utilization of raw materials, because they are ordinarily dear, and very low efficiency is secured from labor, because it is cheap. High efficiency of labor, with its corresponding high rates of wages, naturally increases the home consumption of manufactured products, while the most thorough utilization of power and attendant use of machinery, incident to high rates of labor, does on many articles reduce manufacturing costs to a lower figure than where time rates of labor are less.—*The Engineering Magazine for May*.

How the Scientist Benefits the Wage Worker.

NO one does as much as the scientist to provide work for skilled and unskilled workers. Every invention means that more people must be employed. Prof. Ira Remsen, the scientist, called attention to this lately in a speech delivered in St. Louis. He said: "Many thousands of workmen are now employed, and many millions of dollars are invested, in the manufacture of dye-stuffs that were unknown a few years ago. Thousands of scientifically trained men are engaged in the effort to discover new dyes to meet the increasing demands. New industries are springing up and many find employment in them."

"As a rule the increased demand for labor caused by the establishment of these industries is not offset by the closing of other industries. Certainly it is true that scientific investigation has created large demands for labor that could hardly find employment without these demands."

Our Trade with Sierra Leone.—The direct imports from the United States into Sierra Leone for 1902 were valued at \$229,787, as against \$195,374 the previous year. There was much activity in the building trades, which was followed by increased importations of material from the United States. The arrangement by which articles of merchandise can be purchased in the United States and sent by parcel post to the British dominions, including Sierra Leone, was gladly welcomed by the people generally of this colony. They are taking advantage of this opportunity, which I am quite sure will very greatly benefit the export trade of the United States here and elsewhere in British West Africa.—*John T. Williams, United States Consul, Sierra Leone, Africa*.

Spain Likes Our Farm Machinery.—American agricultural machinery and implements are well accredited in Spain on account of their superior quality and good working conditions. About 35 per cent. of the agricultural machinery sold in Spain is of American make, two-thirds of which are plows. Considerable quantities of American machinery are imported as of English or German make on account of the discriminating tariff, which is about 20 per cent. higher for American than for European imports.

Clever American Cattle.—American cattle raisers have noticed in recent years a wonderful illustration of animal intelligence and instinct. The cattle of former days were of the long-horned kind, and when a herd was threatened with an attack by wolves, the calves were placed in the middle of the bunch and the older ones formed themselves into a circle, all facing outward. Now that the cattle are mostly hornless, they place the calves in the middle, as in old times, but face inward themselves, thus presenting their hoofs to the wolves.

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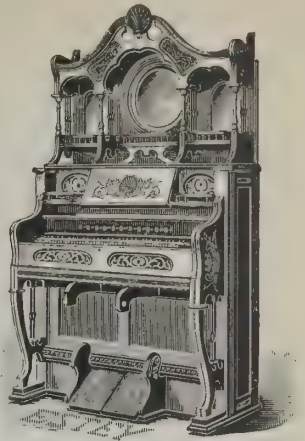
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Our Catalogue, illustrating and describing the various styles of Organs and Pianos made by us, mailed postpaid to all parts of the world.

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Made in mahogany, oak and American walnut. 7½ octaves, scale A to C. Height, 4 feet 3 inches; Length, 5 feet; Depth, 2 feet 3 inches; Weight, boxed, 850 pounds.

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Solid walnut or oak case. Height, 6 feet 8 inches; Breadth, 3 feet 10 inches; Depth, 1 foot 11 inches; Weight, boxed, 400 pounds.



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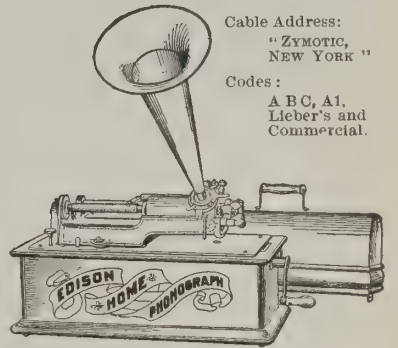
Standard size	\$0.50
Concert size	1.00
Blanks, standard size	0.20
Blanks Shaved, concert size	0.85

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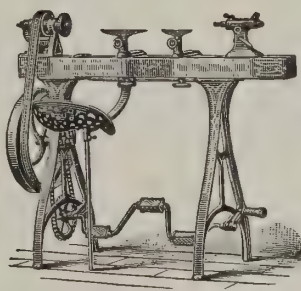
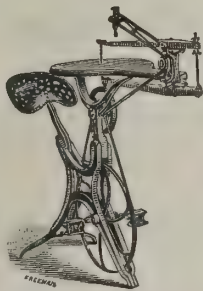
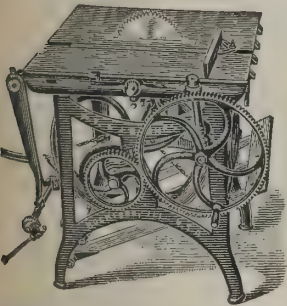
Edison Exhibition Kinetoscope [moving-picture machine], complete,	\$115.00
The same, without Stereopticon attachment	105.00
The same, without Stereopticon and take-up device	90.00
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Original Films for Kinetoscopes; for each 50-foot length, Class A	7.50
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TENONERS, GRINDING MACHINES, DRILLING MACHINES, ETC.**

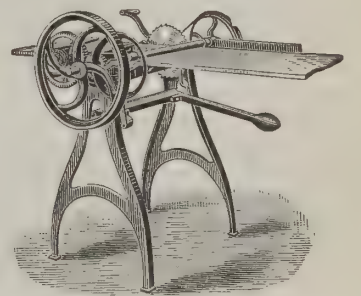
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AND STEAM**

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FOR WOOD AND METAL WORK.

**"NEW JERSEY" COPPER PAINT****LEADS THEM ALL,**

So Our Testimonials Say.

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition and American Institute, New York City.

New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint**, manufactured by Harry Louderbough, proprietor of **NEW JERSEY PAINT WORKS**, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—it is splendid condition.

A PAINT THAT PROTECTS,

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.
MILLS EDWARD, Master Schooner "Florence Shay."

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THE BEST LIGHT**The Cheapest and Strongest
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Makes and burns its own gas. It is portable; hang or set it anywhere. Requires no pipes, wires or gas machine.

A Safe, Pure White, Powerful, Steady Light. Permitted by Fire Insurance Underwriters.

No wicks to trim; no smoke or smell.
**SUPERIOR TO ELECTRICITY
OR ACETYLENE
AND CHEAPER THAN KEROSENE.**

Saving effected by its use quickly pays for it. Over one hundred styles of fixtures for indoor and outdoor use. This is the Pioneer Incandescent Vapor Gas Lamp. It is perfect. Beware of imitations.

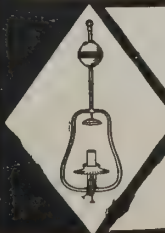
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Tel. Co. and Our Own.



Wood-Working Machinery Progress in America.

OHIO is an American State that gives evidence of the general progress of the country, and *Harper's Weekly* furnishes a chapter regarding its development that is worth reproducing for that reason. The State of Ohio, situated in the center of an extensive timber-producing area, has many large and important furniture factories, show-case and fixture works, sash, door and blind factories, saw and planing mills, as well as carriage, wagon and farm-implement works, veneer and hardwood lumber mills, and the State supplies a large proportion of the intricate machinery used in the working of wood.

Enormous factories occupying acres of floor space, which confine their efforts solely to the manufacture of the highest types of labor-saving devices for working and finishing wood in all its many processes, from the rough-hewn timber to the most beautifully carved and finished cabinet-work, have their home in the Ohio city of Cincinnati, which, with its railroads radiating in every direction and its splendid river facilities, stands to-day preeminent in this important branch of the machinery world.

About the year 1830, before the advent of the railroads across the Alleghenies, certain American manufacturers, realizing the growing demand for wood-working machinery in this part of the country, and knowing the difficulty of transportation across the mountains, located their plants in Cincinnati, O. This industry has been so thoroughly systematized and so ably handled that to-day there is more wood-working machinery made in that city than in any other place in the world. The output of the various factories of Cincinnati is fully \$10,000,000 per annum.

The growth of this industry has naturally gathered together the most skilled designers of machinery, expert mechanical engineers and the highest types of mechanics. Machinery builders from foreign countries when visiting America rarely fail to visit the works there located, which are recognized as the most advanced in their line.

The extent of the business enables the factories to specialize in their work. Distinctive departments are devoted to the manufacture of planers alone; other departments make exclusive band saws, while others again make only circular saws.

There is hardly an operation in the manipulation of wood formerly done entirely by hand tools that has not its special machine, and many of these labor-saving devices were originated in Cincinnati. For instance, the friezing or shaping machine which is now used in every country of the world originated and was first made and used in a factory in Cincinnati, so also with the "jig" or unstrained scroll saw. Many improvements on other machines were also first made there.

Heavy machines for the working of large-sized railroad and bridge timbers for arsenals and navy yards are supplied from there to almost every government of the civilized world, and band-saw mills, for the reduction of logs into standard-length lumber, flooring-machines for the manufacture of ceiling, flooring, casing and drop siding, as well as the all-important machines for molding, shaping, sandpapering, mortising, tenoning, graining, dovetailing, matching, mitering, led the world in the excellence and advancement of their design and mechanism.

An important branch of the wood-working machinery business is that of carriage and wagon machinery. Automatic spoke lathes which make a complete wagon spoke by simply placing an original model of same in the machine, and hub and rim machinery, bending machines, etc., are most interesting and ingenious inventions. The integrity and skill shown in this line of work are a part of the progressive idea which places Ohio more and more every year in the front rank of manufacture and industrial art.

Sending Letters and Packages by Wire.

PROFESSOR MORSE, of New York, discovered that messages might be sent by electricity over a wire; Marconi has found a way to send messages through the air without any wires. Count Robert Taeggi has just worked out a system of despatching letters and parcels by wire. Is it possible that some inventor of the next generation will show us how to shoot letters and parcels through the air from city to city without any wires? The current number of *Popular Mechanics*, perhaps the most progressive and interesting monthly publication of mechanical and inventive progress in America, explains for the first time this most interesting system of rapid-transit letters and parcels by electricity. *Popular Mechanics* says:

"The 'electric post,' which may be the means of transmitting letters and parcels along electric wires at a speed of 250 miles an hour, is being-promoted in England. American capitalists have their eyes on the venture, and it may not be long before we are sending and receiving letters and packages by electricity between the principal cities of the United States. Many in England believe the 'electric post' will prove the most important mechanical development since the first railway was built; that it will soon do away with railway mail trains, letter-carriers, sorting clerks, etc. The system is worked throughout by electricity. By its means a letter could be posted in Chicago and a reply received from New York, 900 miles away, in the same day. A St. Louis draper could place an order for light goods with a Chicago dealer and have the goods delivered before night, for the 'electric post' can carry parcels as well as letters.

"To better explain the working of the system, let it be supposed that the dome of the new Chicago post-office is the central station of the 'electric post' for service in the city of Chicago. From the top of the tower wires would

converge in all directions, reaching throughout the city, supported at intervals by columns 50 feet high, called collecting poles. There would be a pole about every block along the principal business streets of the city. At the base of each of the poles there would be a box in which to post the letters.

"An automatic arrangement inside the box would deface the stamps on the letters, at the same time inscribing the latter with the number of the collecting pole and the date and hour of posting. Every five minutes there would be sent from the central station an empty box, with motor attached, which would run on wheels along the wires. The wires would not only fill the same purpose as rails, but would act as conductors of the electric current to drive the motor.

"On reaching the first collecting pole the box would stop and open itself. At the same time it would cause the collecting box at the base of the column to run up the center of the latter and empty its contents in the receptacle provided. The motor box would then resume its journey, calling at each city pole in turn. Having performed its circuit, the motor box with the letters would return to the central station. There the letters would be sorted and those for other cities would be placed in similar wheeled boxes and despatched along the wires to their destination."

"Practically speaking, the 'electric post' is an electrical aerial railway, with letter-boxes in place of carriages. Cities of the size of St. Louis, Boston, Philadelphia, Washington, Buffalo, Cleveland, Kansas City, San Francisco and New Orleans would be in direct communication with New York and Chicago. Smaller towns would be served from the nearest important center, to which letters would be transmitted in the first place. A great network of wires would be spread over the United States.

"To avoid the possibility of boxes colliding on their way, two sets of wires would be provided, one for the outward and the other for the inward journey. Boxes traveling in the same direction would be kept three miles apart by a 'block' system. 'The vehicles follow one another uninterruptedly,' says Count Taeggi, 'and obey, as it were, the word of command given them at the start.'

"The inventor has provided against the possibility of the mails being robbed while on their midair journey. Every supporting pole would be filled with a fulminating ring, which he calls 'the ring of death.' Being connected with one of the high-potential wires, this ring would inflict a fatal shock upon any stranger climbing to the top of the pole."

German Editor on American Relations.

HERR HUGO VON KUPFFER, editor of the Berlin *Lokal Anzeiger*, one of the largest and most influential newspapers in the German Empire, arrived in America last month on a mission of observation and investigation. Herr von Kupffer expects to remain about two months in this country, visiting different large cities and inquiring into the work of State and municipal institutions.

"In Germany we have come to look upon America as the land of unlimited possibilities," said Herr von Kupffer. "While it is true that one purpose of mine is to visit the Exposition at St. Louis and describe it, another object I have in coming is to study certain American institutions. I think the United States has gone very far forward in matters which pertain to the public welfare. Your provisions for orphans, for the blind, your hospitals, your immigrant institutions are extremely interesting. That side of America appeals to me more strongly than the commercial or industrial side. I have seen America in a time of great depression as well as in a period of great prosperity. I suppose it is imperial America that I now see."

Discussing the relations of Germany with America, England and France, Herr von Kupffer said:

"Between Germany and America there is a feeling of honest commercial rivalry, but nothing like national or individual dislike. It must be borne in mind that there is sometimes a great difference between government feeling and popular feeling in Germany. There is no doubt in my mind that my Government has not the slightest degree of ill-feeling toward America. Germany and France are now on good terms also.

"Do you know it is extraordinary the kind of literature which used to be printed in Germany about America. German writers who came over here saw only peculiar or eccentric customs and institutions and wrote only about that sort. Of course, if people had only such things to read about America, they formed their opinions on that basis, consequently America was looked upon as a nation of eccentricities. This is changing, and there is now so much travel back and forth that a better knowledge of the country has been obtained.

"A large number of Germans are coming over here this summer. I was talking the other day with a manager of a travel bureau, which has arranged a series of excursions to the United States, and he told me that he was fully booked for months ahead. And it is not primarily to see the Exposition. There is, after all, no wide interest in that in Germany, either from a commercial or other standpoint. But it serves as a pretext, and curiosity to see this great country for themselves is the motive which impels our people to come over."

Herr von Kupffer was very much interested in the appearance of New York which he said had changed greatly since his last visit.

"Are skyscrapers really necessary?" he asked. "Why is it that there are so many in New York?"

It was explained to him that real estate, like time, was money in the districts where they have been erected, and he felt satisfied, apparently, with the explanation.

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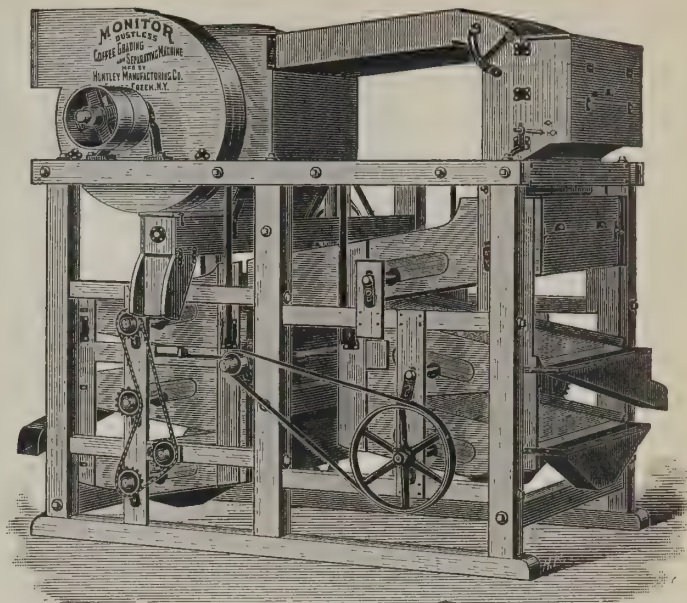
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Electric Marvels of United States Printing-Office.

ELECTRICITY'S marvelous adaptation to industrial uses can be shown to no better advantage than in the United States Government Printing-Office, in Washington, D. C. A writer in the *New York Times* has contributed to current literature an interesting article about this great plant, where under a single roof are more than 600 electric motors alone, driving various kinds of machinery. It is doubtful if any other establishment in the whole world equals this in mere numbers, let alone in the vast variety of purposes for which the motors are employed. Electricity reigns. It lights, it heats, it drives and it transports. It is the wax melter, the gluemaker and tool-heater, as well as the driver of the elevators, the printing-presses and the fire-pumps. Even the big engines which drive the dynamos are dependent upon an electric pump to oil their bearings, and electricity supplies the 4,000 employees with water for drinking and for the toilet, as well as carrying them to their work and lighting the workrooms.

In no other building in the world is electricity commercially employed for such a diversity of purposes. Nowhere else is there such a collection of electrical devices in regular use. From the time the workers arrive until they leave there is never a moment when the ponderous generators in the powerhouse are not helping them in some way. At their incoming electric elevators take them to the workrooms, and at night take them back again. Over the whole 350,000 square feet of floor room there is an electric light for about every 25 feet square, besides clusters and ornamental arrangements of lamps in many places. Electric lifts carry work and materials from floor to floor, and motors run big and little machines everywhere. Even knives for cutting wax have their blades warmed by the electric current.

Throughout the establishment electricity is the ready slave of every one. Whatever steam and gas and coal could do it does, and its ability to do all of these things with facility, economy and handiness is here fully demonstrated. When one considers the magnitude of the office, the bewildering maze of wires required to carry the electricity to every part, the multitude of machines and devices, it seems as if the whole were almost too complicated for any human being to comprehend. Yet when one watches great electrically driven presses controlled by a touch, elevators with heavy loads sent speeding to and fro by pushing a button, or heating devices regulated to the niceties of just keeping a pot of glue warm or of melting solder, the simplicity of it all becomes its most wonderful feature.

Over the six acres of actual working space are scattered more than 600 electric motors, besides the scores and scores of other electric appliances. The largest of the motors is of 100 horse-power. The smallest is of one-sixth horse-power. There are many of these small motors, each taking only a little more current than a couple of incandescent lamps require. The source of the power is a building where four generators are installed, capable of producing combinedly 2,170 horse-power under ordinary demands, or a quarter more if necessary.

At the very entrance the visitor is confronted by the big elevators. Eight are for passengers, five for freight. One of the latter can lift a load of 10,000 pounds at a rate of 150 feet per minute, another lifts 6,000 pounds 100 feet a minute, and the others take loads of 5,000 pounds each and whisk them upward at a rate of 350 feet a minute. Most interesting, however, are two "form" lifts, which play over a distance of 100 feet in height, running between the composing and press rooms and through the other departments. These are strong enough to carry the heaviest "forms" of type and have platforms 6½ by 4 feet to accommodate large chases.

Electricity not only runs these "lifts," but controls them. A workman has merely to push a button when he wants a lift. If it is disengaged it comes to him automatically, stopping and lighting a lamp when it gets to his floor. So long as he keeps the door open no one else can disturb the car, nor can they control it in any way after he has closed the door and pushed a button to send it to some particular floor until it has performed its mission, been unloaded and dismissed. Up and down all day go the lifts, carrying forms, from which the electrically driven presses turn out 60,000 to 70,000 pounds of printed matter every day.

To describe the workings of each of the electric machines and tools would require the telling in detail of the whole of the modern art of printing and binding. It would mean to follow the printed matter from the composing room to the stereotyper, from there to the pressroom, and then to the folders and binders, and incidentally to make many side excursions and at every point to watch electricity helping forward the processes. Even when all was told none but the experts could fully appreciate the perfection of the electric tools, their economy and the accuracy with which they can be regulated. Flexibility is one of electricity's great charms.

Does the workmen want high speed or low, great heat or moderate temperatures, either can be furnished with certainty, while with a finger touch speeds can be raised or reduced, temperatures increased or diminished, or the current cut off entirely. A visit to the Government Printing-Office will make evident to the least skilled observer the handiness of electricity, its cleanliness and healthfulness, and he cannot fail to observe how the absence of shafting and belting adds to the space, the comfort of the workers and to the free diffusion of light.

The yearly output of the Government Printing-Office costs \$6,500,000. It would represent much more than that in a commercial office. It covers 210,000 reams of ordinary paper, flat or in rolls, and something like 10,000

reams of fine, coated book paper for better work. Three million sheets of card and Bristol board and thousands of reams of other sorts of paper are used every year.

American Trade with Asiatic Turkey.

WARES of American make are becoming much better appreciated in Asiatic Turkey than ever before. A report to the United States Department of Commerce from Thomas H. Norton, Consul at Harput, contains some interesting facts and reasons for the favor with which American goods are regarded in that part of the universe. Mr. Norton's communication is too lengthy to print in full, but some extracts will interest our readers in Europe and other parts of the world as well.

"Four-fifths of the emigration from Asia Minor to the United States is from the Harput district, which is in the center of Asiatic Turkey. In consequence of this extensive movement of population, nearly every family has a relative or friend in the United States. As a natural result, gifts of American articles are frequent. Money is remitted in considerable amount. The annual remittance has at times reached \$500,000; it is now \$360,000.

"The widespread influence of the American educational effort at Harput during the last half century has done much to prepare the way for commercial effort. It has brought about a feeling of respect and admiration for the American home and its accessories, for our books, periodicals, inventive skill and practical devices and enterprise. It has likewise led to a deep-seated confidence in the integrity and business principles of the American nation.

"Another helpful feature is the growing dissatisfaction with the articles of European manufacture which have been brought to this market in quantities during the past decade, more particularly from Austria, Germany and Italy. Those wares of American make which are found in the homes of the resident American colony, or have been introduced here for sale, are of such durability that there is a desire for closer trade relations with the country of their origin."

Consul Norton goes into the subject in detail. He reports that American knitting-machines are in successful operation; that there are good reasons for believing that the trade in American shoes could be increased, and he further says: "Some American tools for working both wood and metal have found their way here and are thoroughly appreciated. Inquiries are frequent for small steam and petroleum engines, lathes, sawmills, flouring mills, cotton and wool machinery, water-power outfits and cotton gins."

In conclusion Consul Norton says: "There is but little doubt that the time is ripe, and that there is an exceptional opportunity just now for American commerce to gain so firm a foothold in this region that serious competition would become a matter of great difficulty for many years to come."

American Railway Gives Away Bouquets.

EVERY woman passenger who goes to Niles, Mich., U. S. A., on the Michigan Central Railroad receives a bouquet of cut flowers as a gift from the company. It matters not whether she stops at the station or is just passing through. A uniformed railway employee jumps on every train as it approaches the depot and distributes the dainty blossoms to each woman on board. No matter if it be midwinter, the programme is the same.

The road has a hothouse connected with this depot. In one bed are 4,000 geraniums, under which the soil is heated by imbedded steam-pipes. Near by are sweet peas, snowy oleanders, heliotrope, lilies—everything in the way of flowers. It was more than a decade ago that the company's officials imbibed, whence it is not recorded, the sentimental project of giving to every feminine patron a bunch of flowers. The hothouse at Niles is the outgrowth of that idea.

Electricity as a Handy House Servant.

IN the United States no up-to-date home is now complete without electricity, and the number of uses to which it can be put is increasing every month.

It makes a most valuable and handy house servant. For instance, you can have not only electric light, but an electric stove to warm the house and an electric fan to make it cool. There are electrically heated flat-irons, curling-irons, chafing-dishes, griddles, toasters, cereal boilers and coffee urns. The expense in using these is not more than three-quarters of a cent an hour. An electric "hot-wire" bag has lately come into use, to take the place of hot-water bags. Tiny motors, a foot high, are being used to run sewing-machines, so that even an invalid can operate a machine. Electrically heated dumb-waiters are to be used in a couple of hotels now being built in New York City, and there seems to be no limit to the usefulness of the mysterious power which will interest scientists and inventors for years to come.

American Imports Into Hungary.—The American exporter should know that Hungary's imports in 1903 increased, especially in machinery, scientific and musical instruments, paper and paper wares, chemicals, leather and leather goods, stone coal and iron and ironwares. That less was paid for sugar, clothing and underclothing than in 1902 is due to the rehabilitation of the trade in those lines.—*Frank Dyer Chester, United States Consul, Budapest, Hungary.*

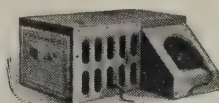
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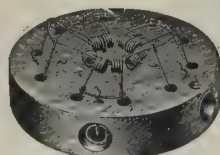
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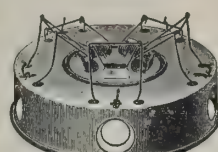
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Spramotor No. 0, Outfit G, with ten feet of hose, hand valve and eight-foot iron extension pipe, patent drip guard and one Spramotor nozzle. Gross weight, 22½ pounds; net weight, 41 pounds; boxed, 12x12x34 inches. Price, complete.....

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Spramotor No. 1, as illustrated, with ten feet of hose, patent hand valve, eight-foot iron extension rod, drip guard and painting nozzle, barrel and screen. Gross weight, 157 pounds; net weight, 65½ pounds. All appliances, as shown, are packed within the barrel; 24x24x34 inches. Price, complete.....

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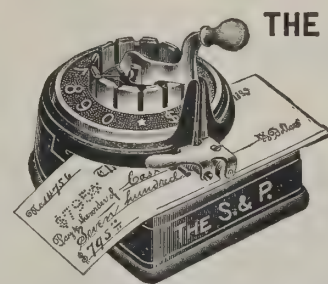
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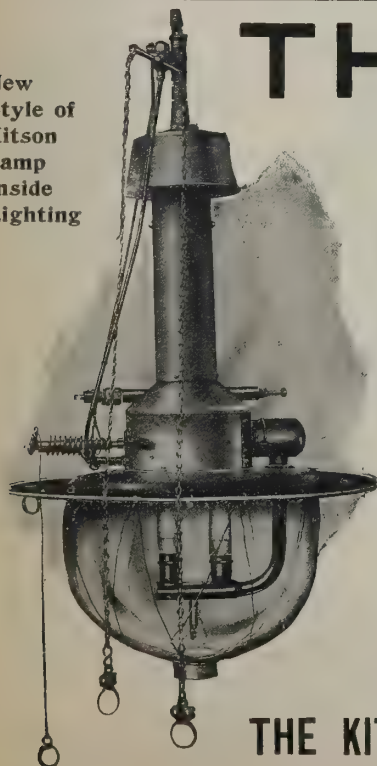
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PREVIOUS AWARDS.

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This system of lighting is applicable for all purposes. For the illumination of streets, factories, halls, churches and private houses. We have over twenty different types of lamps.

BEWARE of infringements and imitations that are being foisted upon the public under other names.

SPECIAL NOTICE.—We are the only legally authorized Export Agents of the Kitson Light, appointed by the Inventor and Patentee.

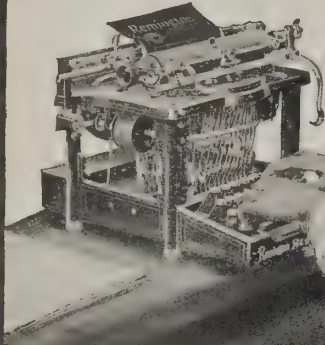
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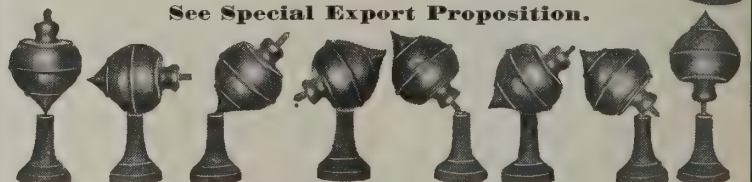
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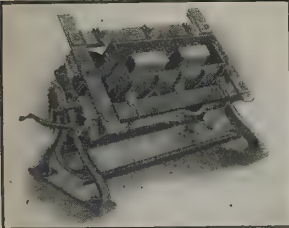
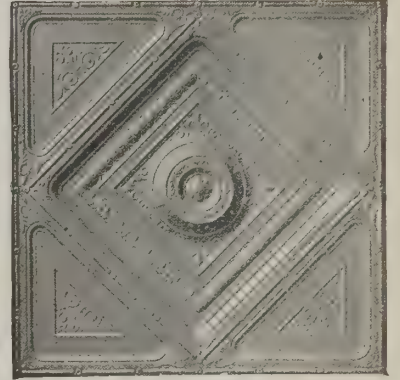
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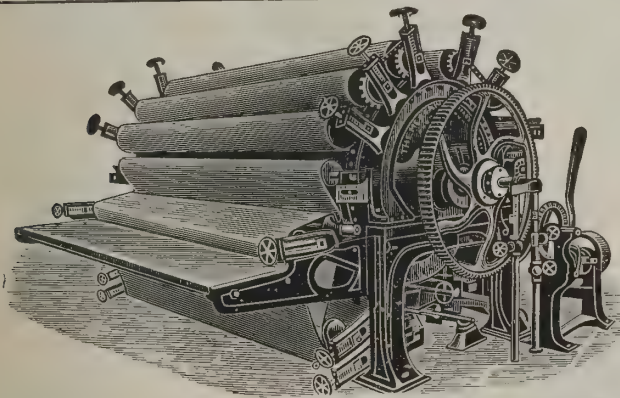
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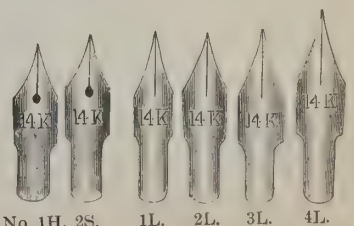
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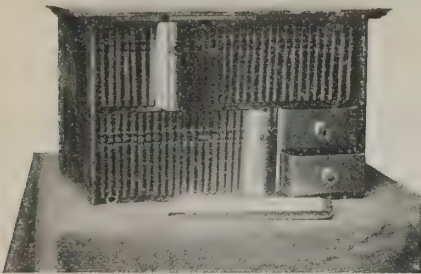
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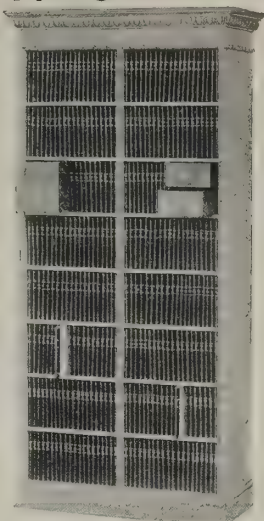
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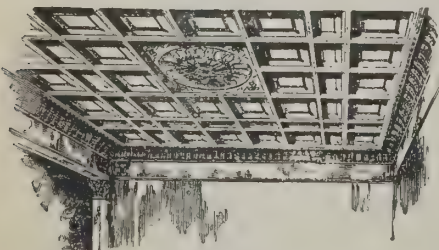
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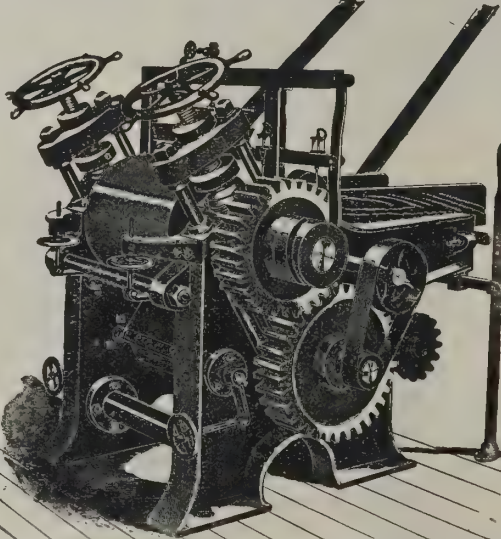
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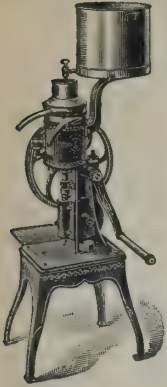
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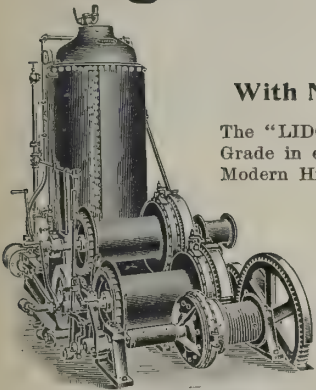
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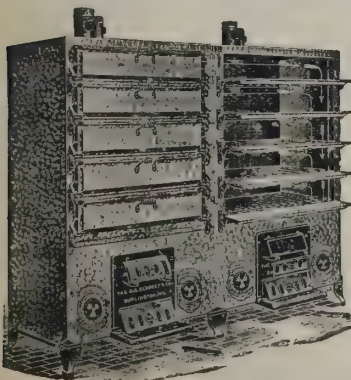


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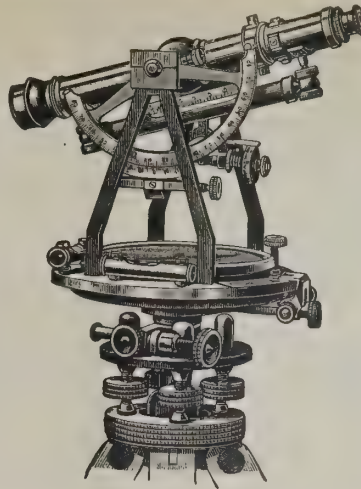
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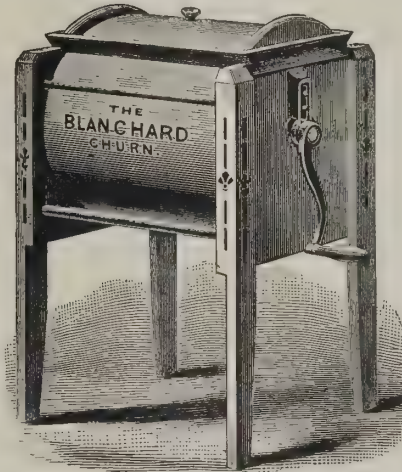
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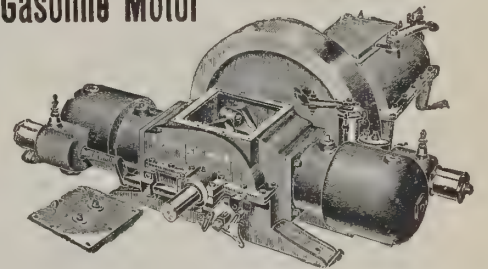
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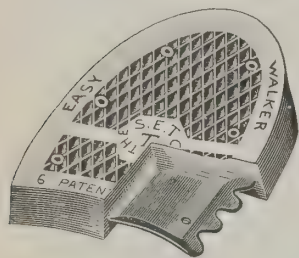
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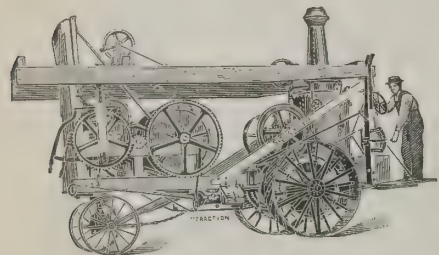
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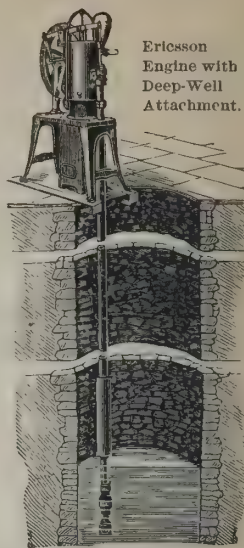
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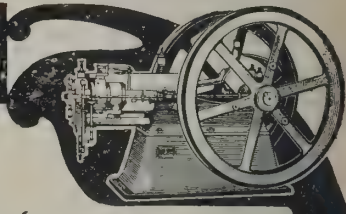
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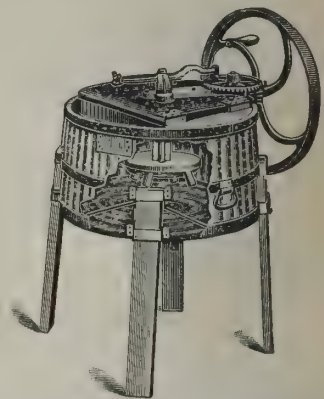
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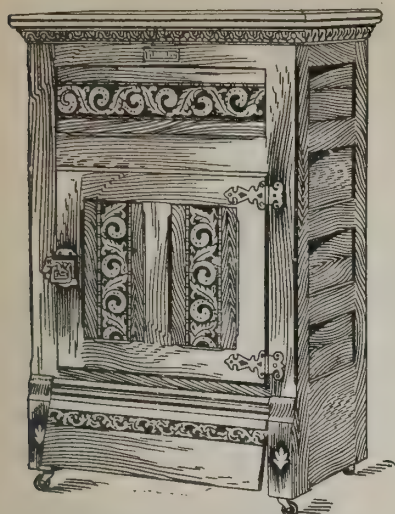
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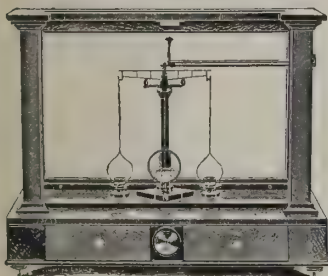
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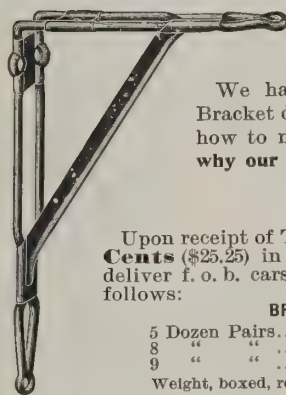
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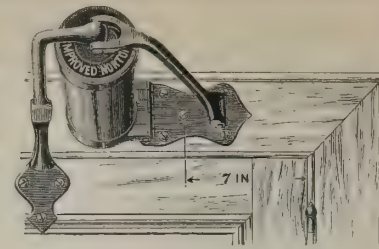


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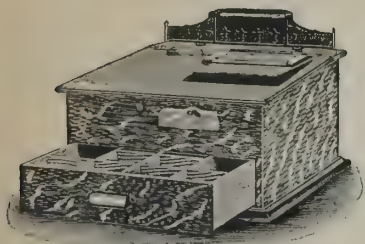
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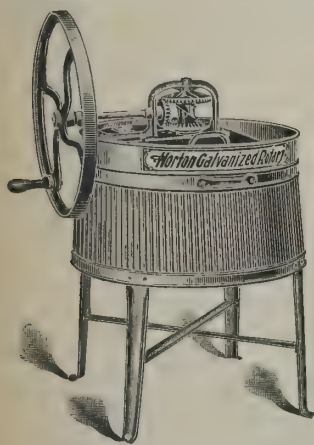
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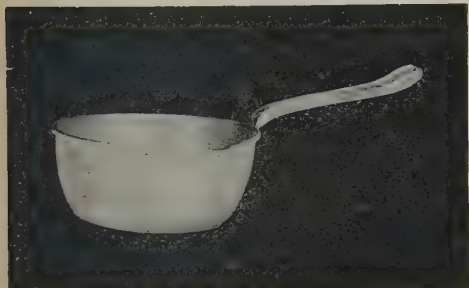
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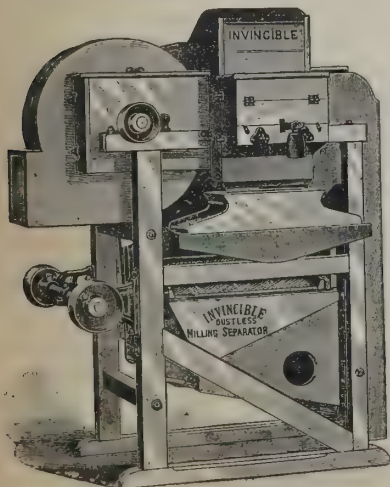
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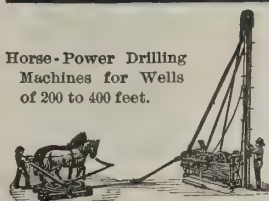
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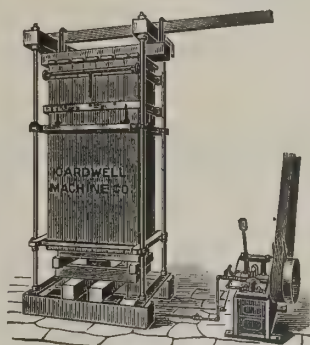
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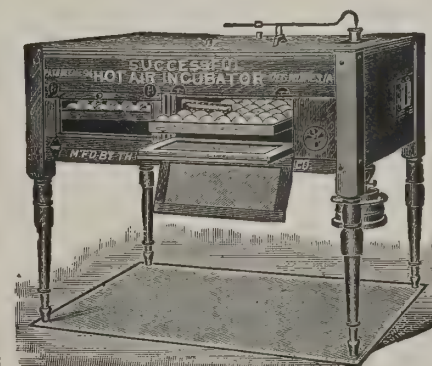


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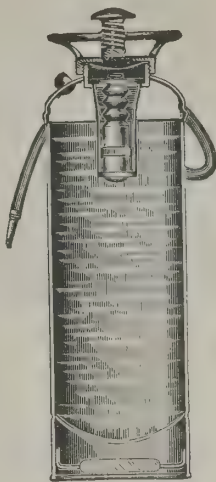
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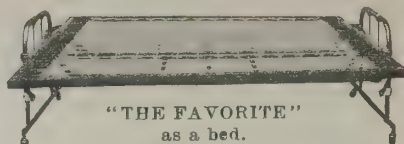
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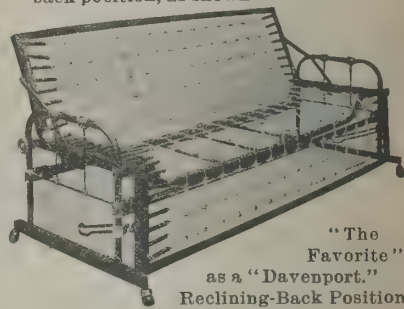
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are Hot-Water, Self-Ventilating,
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15 dozen Chisels made of	3/4 inch Octagon Steel,
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15 " " " " "	1/2 " " " " "
5 " " " " "	3/8 " " " " "
5 " " " " "	1/2 " " " " "

This assortment will weigh approximately 550 lbs. The two
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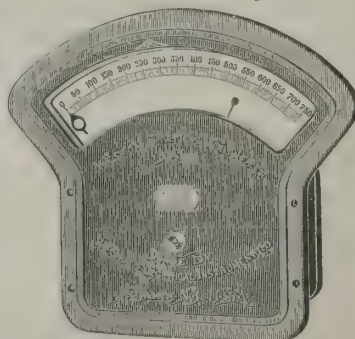


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Potential Indicator, Style B.

Illuminated Dial Station Instruments.

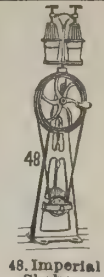
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Inventions for **THE MASSACON**
the Deaf. . . **For the Cure of Catarrhal Deafness.**



THE ACOUSTICON

The manufacturers are pleased to announce that these instruments are now ready for the market. Their success is a matter of scientific history. The Massacon may be ordered with the assurance that it will CURE deafness resulting from catarrh. Other causes should be made a matter of correspondence. Manufactured under the personal supervision of M. R. HUTCHISON. Order through any commission house, mailing us a copy of order to avoid mistakes.

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Cable Address, "Acousticon."

MASSACON PRICES.

Type A—In a very handsome case of quartered oak, mahogany or ebony, as may be desired. Has necessary controlling apparatus for use in connection with electric light, such as may be found in any city or town, and **ALSO IN CONNECTION WITH BATTERY**, when light circuit is not convenient.

Price, f. o. b. New York, weight 5 lbs.,	-	\$100
Battery, extra, weight 34 lbs.,	-	12

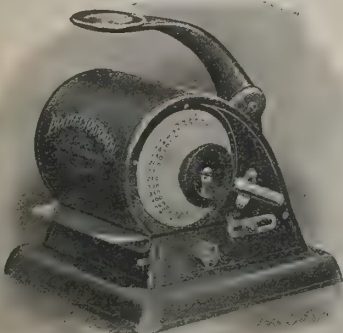
Type B—This instrument is identically the same as Type A in finish, except it is arranged to be operated with a battery alone and cannot be used with an electric-light circuit.

Price, including battery, f. o. b. New York,
weight 5 lbs., - - - - - **\$90**
Battery, extra, weight 24 lbs., - - - - - **10**

Type D—This instrument is not provided with the attachments for use with an electric-light circuit, but is used with a battery only. Nicely polished oak case.

Price, including battery, f. o. b. New York,	
weight 4 lbs.,	\$50
Battery, extra, weight 12 lbs.,	6

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Are now in daily use by the leading financial, industrial and mercantile institutions of America, and are exclusively employed by the United States Government.

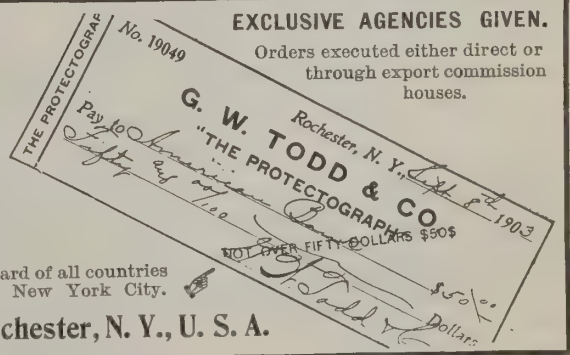
The machine is a marvel of simplicity, being but six inches square and weighing only ten pounds, boxed ready for shipment. One movement of the lever indents the limiting line upon any preferred part of the check (see reduced facsimile of check) and by its system of compound levers forces an especially prepared indelible ink into the fiber of the paper, making it a part of the document itself and rendering its removal impossible.

The Protectograph is made to conform to the monetary standard of all countries and to print in any language. The price is **\$30**, delivered New York City.

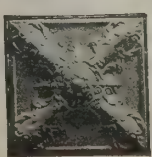
G. W. TODD & CO., Mfrs., 40 Trust Bldg., Rochester, N. Y., U. S. A.

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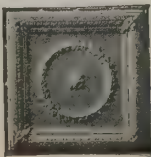
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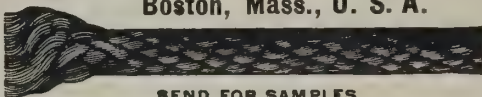
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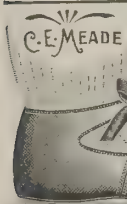
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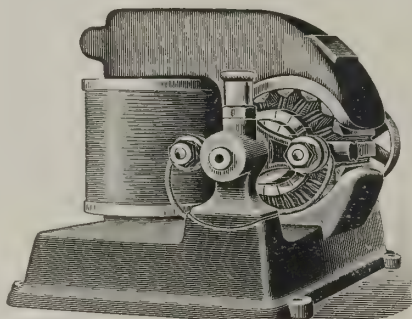
The Type "B" Dynamo or Motor.

Price, \$26.50,
F. O. B. New York.

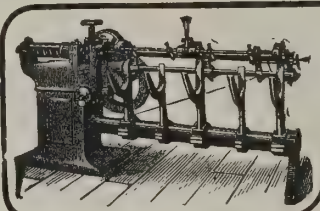
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This is a GOOD machine and will give the best of satisfaction. Standard voltage, 110, but can be wound to order for any voltage up to 500, at special prices.

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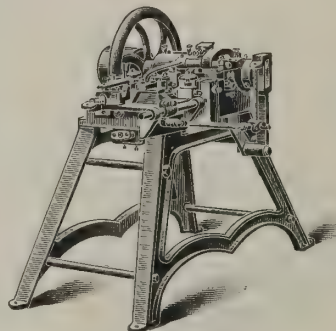
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STEEL and WOUND
Musical Strings.

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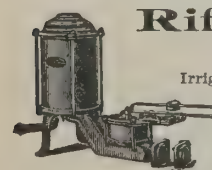
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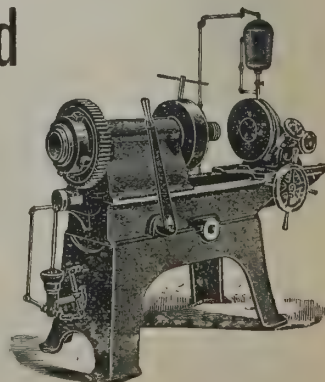
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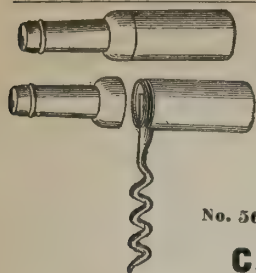
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Built to Meet a Need

for a pipe-threading machine, to handle such work expeditiously and accurately. Built with a knowledge of what these needs have been and built to meet them squarely and fully. The machine here shown is our No. 3. It handles pipe from 1 1/2" to 6". We make four other sizes that handle work from 1/4" to 12". These machines have quick-opening, adjustable dies and such other features as tend to make them just right. Also manufacturers of Special Tools. Write for Catalogue.

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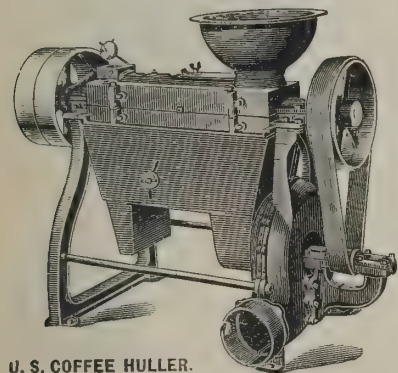


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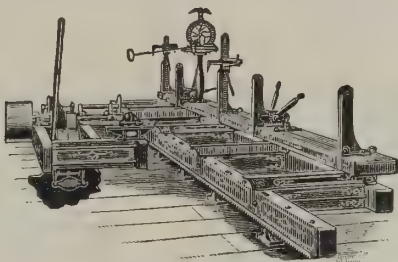
have a world-wide reputation and are made to suit all sorts and conditions of people.

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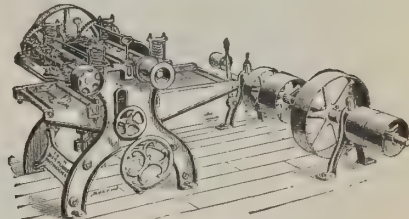


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We build a complete line of Machinery for Handling the Coffee Crop, also Large and Small Saw Mills to suit all conditions, and Wood-working Machinery. Write for Catalogue, Spanish or English.

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20-INCH DIXIE PLANER AND MATCHER.

For dressing and tonguing and grooving lumber, such as siding, flooring, ceiling, etc.

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PLAIN TIPPED PATTERN.—Net Prices f. o. b. Steamer New York City.		Per gross.
Tea Spoons, packed 12 gross in case		\$1.00 £0.4.2
Dessert Spoons, " " " "		1.80 0.7.6
Table Spoons, " " " "		2.00 0.8.4
Medium Forks, " " " "		2.30 0.9.7

FANCY PATTERN CHILD SETS.

Child Sets (3 pieces), knife, fork, and spoon, packed each set in lined box, 144 boxes in case, per gross sets	\$8.00 £1.12.0
Tea Spoons, twelve gross, net weight 88 lbs., 36½ kilos; gross weight 90 lbs., 41¼ kilos.	
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KNOWN AND IN USE THROUGHOUT THE CIVILIZED WORLD.

The O. K. is the KING of ROTARY WASHING MACHINES! Because:

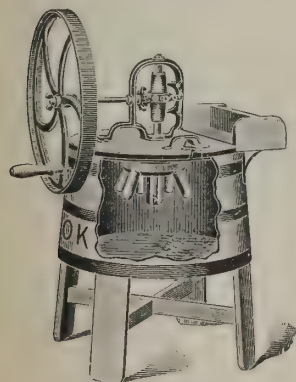
1. The O. K. is the only Rotary Washer that has **Revolving Steel Ball Gearing**, reducing the friction and thus making the machine so **light running and almost noiseless**.
2. The tub is made of **Louisiana Red Cypress** lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside or the tub, as are all of the castings.
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4. The O. K. Washer is made by experienced mechanics, and will outlast any other washer on the market.
5. The tub has a wringer box, fastened with steel brackets.
6. The lid on tub closes tight, no escape of steam.
7. Has glided hoops, castings and name.

Prices quoted F. O. B. New York. Each O. K. Washing Machine, crated, ready for transportation abroad, weighs about ninety (90) pounds, and occupies nine (9) cubic feet.

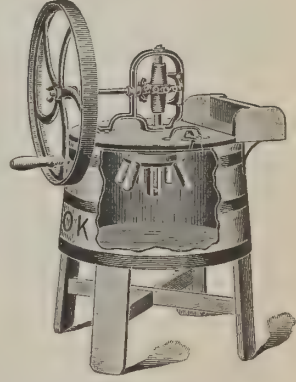
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H. F. BRAMMER MFG. CO.,

DAVENPORT IOWA, U. S. A.



O. K. WASHER.



O. K. WASHER.

GOULD'S STEAM AND WATER PACKING.

Patented June 1, 1880.—The Original Ring Packing.

IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM. SELF-LUBRICATING, STEAM AND WATER TIGHT.

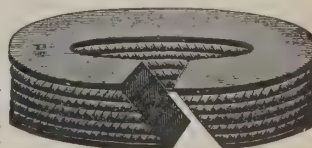
Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

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F. J. FOX, Rochester, N. Y., U. S. A.

MANUFACTURER AND EXPORTER OF

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20 DIFFERENT STYLES.
SIZES 0 to 4.

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The B. B. Reclining Chair,

In which to Read, Rest, Sleep, Write, Study, Sew or Smoke.

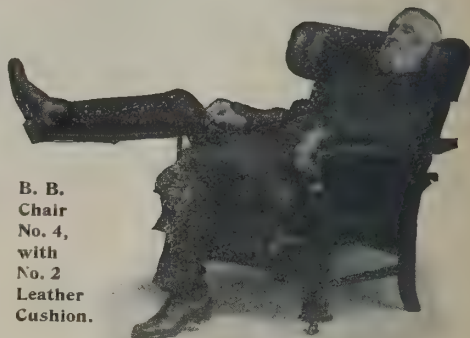
Adaptable to Your Different Inclinations of Mind or Body.

The Chair here shown is that known as our B. B. No. 4. It is made in weathered oak finish and is leather covered.

Upon receipt of **twenty-five dollars and fifty cents** in U. S. gold, or its equivalent, we will crate ready for steamer and deliver f. o. b. cars at New York City, **One No. 4 B. B. Adjustable Chair**, made from quartered-sawed oak, finished in either Golden, Weathered or Flemish.

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OUR ALUMINUM COMBS are properly made, with thoroughly rounded, tapered and polished teeth, and are unsurpassed for UTILITY, BEAUTY, CLEANLINESS and DURABILITY. NON-TARNISHABLE and SANITARY. Our Combs are made from PURE NICKEL-ALUMINUM, and NOT from cheap alloys, some of which are now on the market.

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THE SANITARY COFFEE MAKER.

GOOD COFFEE WITHOUT EGGS OR SACK.
Made of pure finely perforated aluminum.

Will not taint or tarnish. Will fit any Coffee Pot. The quickest seller of any Household Article upon the market, and should be in every house throughout the civilized globe.



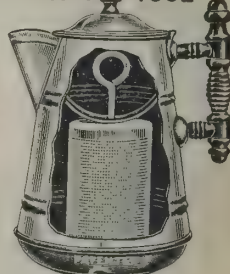
Sanitary Coffee Maker.

FOR EXPORTATION ONLY. Upon receipt of Thirty-seven and 50-100 Dollars (\$37.50) in U. S. gold, or its equivalent, we will box ready for steamer and deliver F. O. B. cars New York, one hundred (100) SANITARY COFFEE MAKERS as follows: Fifty Style No. 2, capacity seven cups of coffee. Fifty Style No. 3, capacity fifteen cups of coffee. Style No. 2 retails in the U. S. at fifty cents each; Style No. 3 at seventy-five cents each. Size of box containing one hundred Sanitary Coffee Makers, 20x28x35 inches, weight fifty pounds. Each Sanitary Coffee Maker is packed in an individual paper box, suitable for mailing. The Sanitary Coffee Maker will fit any coffee pot. We also make large sizes of the Sanitary Coffee Maker (two to fifteen gallons capacity) for hotels, clubs and restaurants.

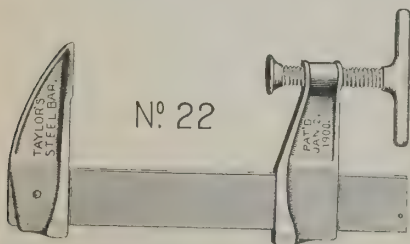
THE WISCONSIN MFG. CO., Manitowoc, Wis., U. S. A.

OVER HALF A MILLION IN USE
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PAT'D 1902



Sanitary Coffee Maker within Coffee Pot.



No. 22

N. B.—The steel used exclusively in these Clamps is of a special high grade, testing more than double the strength of Bessemer steel for clamping purposes.

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Tested and adopted by the United States Navy Yards and leading concerns in the United States and foreign countries. Orders filled through commission houses. Address



Correspondence solicited.
Catalogue No. 5A on application.

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Manufacturers and
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LASTS

IN ALL SHAPES
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FOR MEN, WOMEN, YOUNG MEN AND MISSES.

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are from 40 to 75 per cent. lighter than iron pulleys, and will transmit from 25 to 65 per cent. more power than any iron or steel pulley. The "Paul Pulleys" are the strongest, lightest, handsomest, quickest adjusted and truest running WOOD PULLEYS in the world. Our illustrated price-list mailed postpaid, and prices quoted f. o. b. New York, Boston or Baltimore.

PAUL MANUFACTURING CO.,
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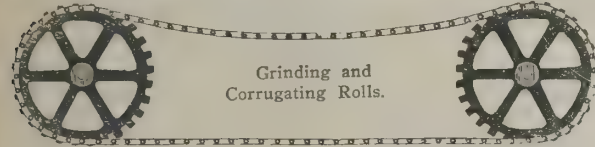


Mey Detachable Chain Belt.

The Mey Chain Belting Engineering Works,

H. F. Mayer, Prop.,

14 Perry Street, Buffalo, N. Y., U. S. A.

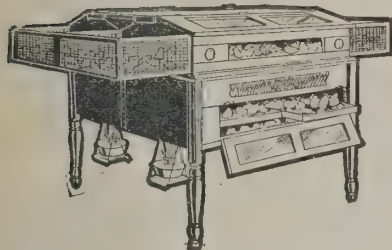


Grinding and
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Manufacturer of
Patent Mey Chain,
Link Chain, Sprockets,
Elevator Buckets,
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Elevating Machinery.

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RELIABLE INCUBATOR & BROODER CO., Box A 000, Quincy, Ills., U. S. A.

The Glow Night Lamp.

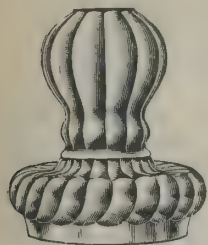
A SCIENTIFIC WONDER

**200 HOURS' LIGHT
FOR ONE CENT.**

Makes and consumes its own gas, generated from kerosene oil. The only lamp using a glass burner.

**Absolutely Safe and Free
from Smoke or Odor.**

Catalogue and Price List sent on application. Patented in the United States, Gt. Britain, France and Austria.

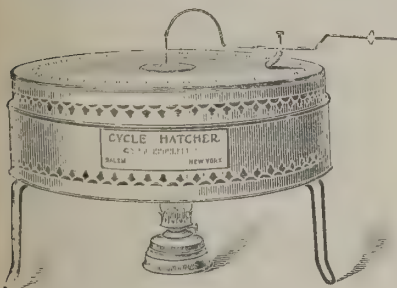


Style 1.



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THE GLOW NIGHT LAMP CO., Incorp., 73-75 PEARL ST., Boston, Mass, U.S.A.



A HATCHING WONDER

The new **CYCLE HATCHER**. An entirely novel method of hatching and brooding chicks. Requires only the self-supplied moisture of the egg itself. No egg-tray doors to open. Regulation automatic and exact. Holds from 50 to 10,000 and can be set with 50 or more eggs per day, making it unnecessary to fill entire machine at starting. Eggs cooled without removal from machine. Will hatch hens, ducks, geese and turkey eggs equally well at the same time. Made entirely of metal and asbestos. Is fire-proof and will not warp, swell, shrink or crack. 50-egg size, 7 x 17 1/2 inches; weight, 12 lbs. Net price, \$5.00. For full particulars address

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Bucket Elevators.

Jeffrey Elevating Conveying Machinery

For Catalogue, Address
THE JEFFREY MFG. CO.,
Columbus, Ohio,
U. S. A.

Chains, Sprocket
Wheels, Elevator
Buckets, Elevator
Boots, Elevator
Bolts, Cable Con-
veyors, Spiral
Conveyors, Rub-
ber Belt Convey-
ors, Dump Cars,
Skip Cars, Dredg-
es, Hoists, Etc.



Dump Cars for all
purposes.



Elevator Buckets made to order in any size, of either steel, copper, brass, zinc or tin.

Mining Machines, Electric Locomotives, Power Coal Drills, Coal Washers, Coal Crushers, Coke Crushers, Electric Pumps, Etc.

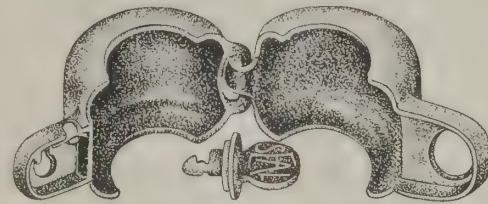


Spiral Conveyors.

NEW YORK OFFICE:
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WANTED Agents to sell our Whale Art Embroidery Needles, which do elegant work on any woven goods, making beautiful raised figures of birds, animals, flowers and many useful articles to ornament the home. Any person can use it and do the work ten times faster than by hand. This is one of the easiest and most rapid money-making propositions in the market. Our agents are making rapid sales and big money wherever they offer the Needles. No experience is required to make a success. We furnish the outfit and full instructions with the first dozen Needles, so our agents are at once fully qualified to begin work and are assured of a handsome income. Send for a sample dozen Needles and terms on large quantities. We send sample dozen for \$2.70. Our \$3.00 White Rabbit Sofa Cushion and other samples of the work we furnish FREE to agents make it a pleasure to sell the Needles. **WHALE ART CO., 527 Bates St., St. Louis, Mo., U. S. A.**



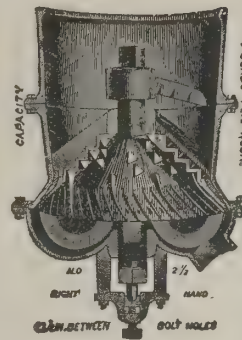
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NO MORE STOLEN GAS
OR WATER

The Columbus Meter Seal insures absolute protection.

Impossible to tamper with the meter without breaking the seal—then the jig is up. Write for particulars.

COLUMBUS METER SEAL COMPANY,
COLUMBUS, OHIO, U. S. A.



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333 East Fulton St., Lancaster, Pa., U. S. A.

Manufacturers of

Bark Mills and Tannery Machinery

Including the Celebrated "EUREKA" Bark Mill

It grinds uniformly on wet and dry bark. It does more work with given power and less repairs than any other mill. Accurate and simple. Cannot get out of order. Entirely satisfactory.

Centrifugal Pumps, Tannery Rollers, Steam Engines, Leather Pressure Rollers and Beds, Tan Oven Castings, Etc.

Write for Catalogue "A" and Prices for Export. Orders executed either direct or through Export Commission Houses.

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Is as useful as your typewriter in your office. It is made so that you can put it into a holder and use it immediately as a rubber stamp. You can set three or four lines if you wish. For business men we have a special set with five capital letters and six small letters of the ones used most, and the rest in proportion. Price, \$2.00, postpaid. We also manufacture Rubber Stamp Machines, Printing Presses, Steel Stamps, Seals, Stencils and Rubber Stamps.

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THE IDEAL CLIP

will hold more papers than any clip of its size on the market. It has

NO UNPROTECTED POINTS.

Instantly applied—observe the cut—there are FOUR impinging points, giving a firm and evenly distributed grip.

PRICES: 15c. per Box of 100.
\$1.35 per Carton of 10 Boxes.
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Write for trade prices and discounts, also catalogue of specialties. Postage stamps not accepted.

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Riessner's Imperial Gold Ink.

An entirely new article; not the kind that you have used for the past 20 years, but a gold ink that is equal to dry bronzing. **Made only for Plated and Coated Stock.** Nothing equal to it. A time and labor saver. Any printer can use it. The most brilliant Gold Ink ever made. Give it a trial and be convinced. Something that all printers have been looking for. Rich gold, pale gold and copper, \$3 per lb.; aluminum, \$4 per lb. Put up in 1-lb. tin cans. Liberal discounts for quantities.

Orders received through any American export house. To avoid errors please mail us duplicate of order.

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PRINTS BRIGHT GOLD.

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VAN BIBBER'S "ROUGH AND READY" ("El Tosco y Listo").

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For ANY climate, hot or cold, can be made at once by any printer. You can make the best rollers, as hard or as soft as you please. No roller can be better. "Rough and Ready" does not spoil from age. English and Spanish directions. Price, 35c. List per pound, 77c. List per kilo, f. o. b. New York. Being an unfinished composition, the rollers when made cost less than this. Send to us for pamphlet. Used since 1878. We are manufacturers who sell at first hand and invite correspondence from prominent foreign dealers, to whom we offer special inducements; or, if you prefer, order through Amsinck & Co., American Trading Co. or any other responsible New York exporter.

Printers' Roller Composition.

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MANUFACTURERS AND EXPORTERS OF THE



Beats all dust raisers. It is practically two beaters in one, as the illustration shows. Is made of coppered steel wire and is 30 inches long. The four wires are twisted together, going from one-half to two-thirds, and one clear through the handle, securing the same permanently in place. Orders filled through commission houses. Correspondence solicited.

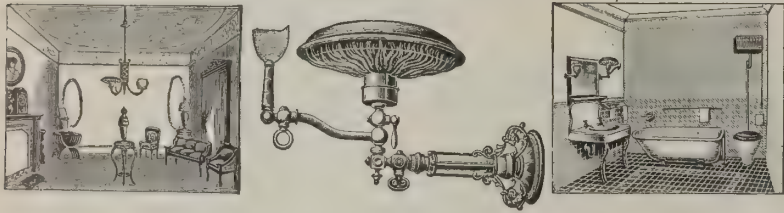
PETER GRAY & SONS,

88-90 Union Street, Boston, Mass., U. S. A.

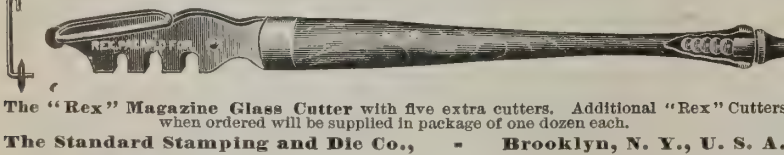
MANUFACTURERS OF



"FERNO" Heating Disc & Cooking Stove



The "Rex" Magazine Glass Cutter with five extra cutters. Additional "Rex" Cutters when ordered will be supplied in package of one dozen each.



Quality Counts. Merit Wins.

PECK'S HATCHETS and AXES.

All Hand Forged. Fully Guaranteed.

PECK EDGE TOOL CO.,

Cohoes, N. Y., U. S. A.

Write for Catalogue and Prices.

There Is Only ONE ALBANY GREASE

This Trademark on every package.



Look out for Yellow Label.

ADAM COOK'S SONS,

And we are the only Makers.

Have you seen Albany Grease? How many know its worth?

Cost of using Oil.

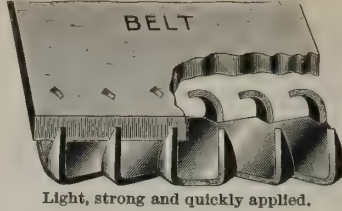
Cost of using Albany Grease.

Albany Grease is the only safe lubricant for electrical machinery of all kinds and is used by all the large plants and every street railway in the U. S. A. Self-acting. Where oil is used we can save you from 1/4 to 1/2 in the cost of lubrication. Oils are advancing and it will pay to use Albany Grease at the present prices. Small 4-oz. sample free on application.

To introduce abroad [only] will box ready for steamer and deliver in New York sample case of 100 lbs., containing two 10-lb. cans each Nos. 0, 1, 2, 3 and X Albany Compound at \$12 American Gold, net. Case measures 36 x 14 x 7 1/2; gross weight, 123 lbs. Order direct or through your Commission House.

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ACME STEEL BELT HOOKS.

Trial package weighing 12 lbs., contains 100 fasteners for belts 2 inches (50 m/m) wide; 100 for belts 1 1/2 inches (40 m/m) wide; 100 for belts of all widths, and 1 box of assorted sizes.

Net Price, at New York, \$3.00.

Sold direct or through export houses.

W. O. TALCOTT, Providence, R. I., U. S. A.

No Physician's Office Equipment Is Complete Without Some of Our

Diagnostic Instruments,

With COLD LAMPS.

Send for Catalogue A.

Rochester Surgical Appliance Co., 17 ELM STREET, ROCHESTER, N. Y.

KEASEY WOOD SPLIT PULLEYS

with Malleable Iron Hubs are mechanically correct in design and construction. No slippage on the shaft. No wide paddle-like arms to fan the air and consume power. Be progressive and use a modern pulley.

A half million already in daily use. Live machinery and supply dealers everywhere handle and carry them in stock. Catalog on request.

THE KEASEY PULLEY CO., Toledo, Ohio, U. S. A.

Also Manufacturers of Hangers, Pillow Blocks, Shafting, Etc. Send for Lists and Discounts.

Rings that are Guaranteed to give wearer Satisfaction

MADE OF ROLLED-GOLD SEAMLESS WIRE.

In order to introduce our lines we are prepared to send an assortment of our samples, 48 styles of our rings for \$10.00, U. S. Currency, which will give an idea of the excellent quality of our manufacture. Catalogue and price list on application. Orders executed direct or through any export commission house.

THE R. L. GRIFFITH & SON CO., Providence, R. I., U. S. A. Established 1879

Palmer Gasoline Engines and Launches.

Over 9000 in Successful Operation.

PRICES FOR EXPORT ONLY:

1 1/2 H. P. Two-Cycle Marine Engine	\$ 75.00
3 " " " "	90.00
5 " " " "	150.00
7 " " " "	175.00

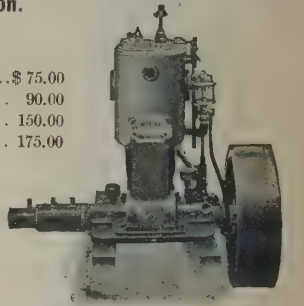
Four-Cycle Motors from 3 to 32 H. P. each.

Automobile Motors and Complete Launches.

Send for Catalogue.

PALMER BROS.

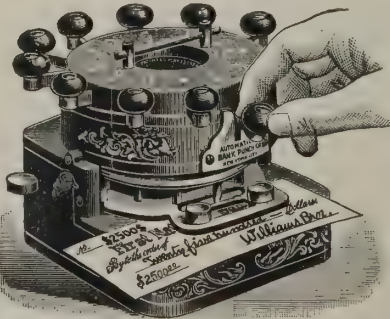
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Protection for Bank Checks!

A device that insures bank checks and drafts from being raised or altered appeals to all good business concerns—conservative as well as progressive.

The laws of nearly all countries make it incumbent upon those issuing checks to surround them with every obtainable protection.



£\$1234567890

The Ingersoll Automatic Check Punch cuts the marks and figures into the check and on account of their peculiar design, they cannot be successfully altered. Guaranteed five years—lasts twenty.

Used and endorsed by leading banks and mercantile houses of the United States

Correspondence invited from houses able to distribute in quantities.

PRICE, \$25.00

LIBERAL DISCOUNTS TO THE TRADE.

A. N. INGERSOLL, 46 CORTLANDT STREET, New York, U. S. A.

★ STAR CREAM SEPARATORS. ★

Over 250,000 in use.

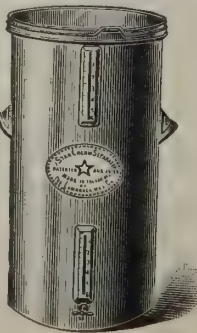
More simple in construction, requires less labor and makes from 20 to 30 per cent. more butter than any other separator on the market.

To introduce abroad.—We will, upon receipt of Twenty-four dollars and fifty cents (\$24.50) in U. S. gold, or its equivalent, box ready for steamer and deliver f. o. b. cars at New York City, one of each of our Star Cream Separators, seven in all, as follows:

- No. 0. Capacity [1 cow] 24 quarts.
- No. 1. Capacity [1 to 2 cows] 48 quarts.
- No. 2. Capacity [3 to 4 cows] 88 quarts.
- No. 3. Capacity [6 to 8 cows] 118 quarts.
- No. 4. Capacity [8 to 10 cows] 180 quarts.
- No. 5. Capacity [15 cows] 160 quarts.
- No. 6. Capacity [20 cows] 200 quarts.

Weight of the seven Star Cream Separators, boxed for shipment, 140 lbs.

Orders received direct or through export houses. When ordering through the latter, please mail us duplicate of order, to avoid errors.



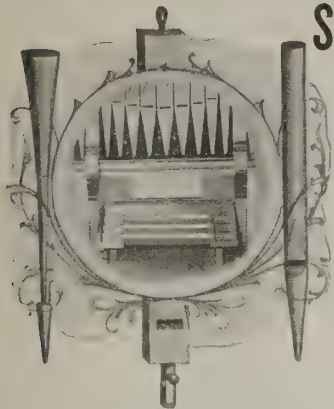
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Noxall Natural Stone Water Filters.

Make all water, no matter how dirty, absolutely pure. Prevent typhoid and all zymotic diseases. Are small, compact, simple and inexpensive. All sizes and prices from \$2.50 up. For full particulars, terms, discounts, etc., write to

AMERICAN FILTER CO.
580 Montgomery Bldg., Milwaukee, U. S. A.



Samuel Pierce Organ Pipe Co.

Manufacturers and Exporters of

Metal and Wood Organ Pipes

AND ORGAN MATERIALS.

SPECIALTIES: Decorating Front, Pipes, Voicing Flue and Reed Pipes.

The Oldest Organ Pipe Manufacturers in the United States.

Correspondence solicited. Catalogue "D" on application.

SAMUEL PIERCE ORGAN PIPE CO.,
READING, MASS., U. S. A.

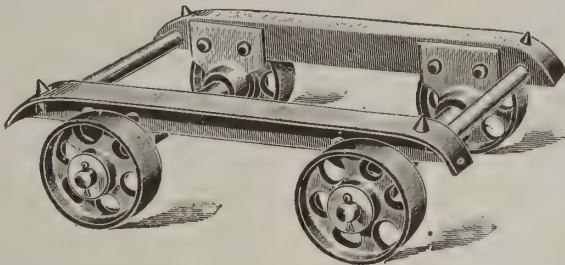
CITY FORGE & IRON WORKS, Dayton, Ohio, U. S. A.

Gem Box Truck

Made of Steel and Cast Iron.

Will carry a load of 2000 pounds. Weight only 44 pounds. Orders filled through commission houses.

Special Export Offer—Six trucks, packed for export and delivered f. o. b. cars New York, for \$36.00 net. Size of crate with six trucks, 20x26x4 inches; with one truck, 20x26x8 inches.



A. W. BRIM

Manufacturer and Exporter of

Lead Composition and Brass Pattern Letters and Figures

FOR FOUNDRY MEN AND PATTERN MAKERS.

Orders filled through commission houses. Correspondence solicited. Catalogue "B" on application.

SENECA FALLS, N. Y., U. S. A.

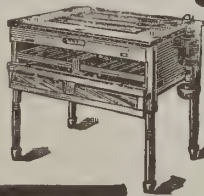
200-Egg Incubator for \$12.80

The simplicity of the Stahl Incubators created a demand that forced the production to such great proportions it is now possible to offer a first-class 200-egg incubator for \$12.80. This new incubator is an enlargement of the famous

WOODEN HEN

recognized the most perfect small hatcher. This new incubator is thoroughly well made; is a marvel of simplicity, and so perfect in its working that it hatches every fertile egg. Write for anything you want to know about incubators. Send for the new free illustrated catalogue.

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TANITE

GRINDING MACHINES.
EMERY WHEELS.
EMERY.

The Tanite Co., Stroudsburg, Penna., U. S. A.

You can buy to advantage through any American Export House—preferably in New York City.



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MANUFACTURERS AND EXPORTERS OF

Star Pointer Knee Boot, 20th-Century Toe Weight, Chehalis Hopple, Winkers, Fronts and Housings.

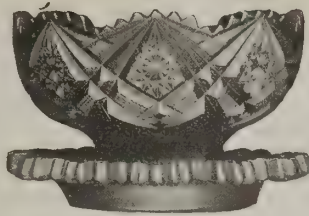
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NEWARK, N. J.

U. S. A.

T. B. CLARK & CO., Inc.

Manufacturers of



RICH CUT GLASS

Honesdale, Pa., U. S. A.

Just the Thing for the Kitchen.

PAUL KITCHEN CABINET No. 50

has hardwood frame and legs, oak finish, whitewood top, 26x47 inches; height, 29 inches; has 2 sliding flour bins, with 2-ply veneer bottoms, one partitioned for cornmeal, graham flour, sugar or salt; 2 drawers; 1 bread and 1 meat board.

\$29.50—Six Kitchen Cabinets as shown

Delivered k. d., f. o. b. New York, Boston or Baltimore. Each cabinet weighs 90 lbs. Packed 2 to crate. Size, 4 ft. x 3 ft. x 2 1/2 ft., or 30 cu. ft.; this is for 2 cabinets packed together. 2 cabinets weigh, packed, 210 lbs.



Paul Kitchen Cabinet No. 50.

PAUL MANUFACTURING CO.,

Fort Wayne, Indiana, U. S. A.

NOTICE TO Foreign Commission Brokers and Correspondents.

We would like to communicate with reliable brokers with the view to securing their services to represent us in the sale of stock in a meritorious company.

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Send your orders to

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Manufacturers and Exporters of Harrison's Pain Curer—an Instant Reliever. Also Manufacturers of Infant Syrup—the Nurse's Treasure; Nervina—the Nerve Strengthening; Malaria Specific—cures La Grippe and Malaria; Special Antidote—for Kidney Complaints; Soothing Balm—for Coughs, Croup and Asthma; Magnetic Healer—Skin Beautifier and Healer; Herbal Discovery—Great Blood Purifier, and all kinds of Cooking and Medicinal Extracts for family use. Orders filled through commission houses. Correspondence solicited. Catalogue H on application.



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A WORLD-RENOUNDED REMEDY

For Coughs, Colds, Bronchitis, Asthma, Catarrh, the Hacking Cough in Consumption, and numerous affections of the Throat, giving immediate Relief. They have received the sanction of physicians generally and testimonials from eminent men throughout the world. All dealers in medicines and proprietary goods can recommend them with confidence. Caution.—"Brown's Bronchial Troches" are sold only in boxes or bottles, with Facsimile of the proprietors on outside wrapper of the package.

JOHN I. BROWN & SON, Proprietors, Boston, Mass., U. S. A., and London, England.



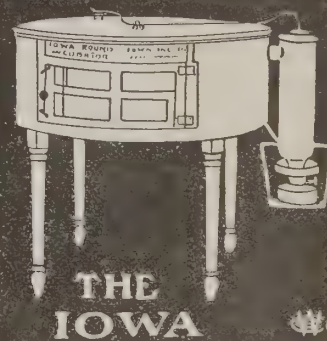
355 Eggs 354 Chicks

That's the result Mr. Geo. McDowell, Che-mung Center, N. Y., obtained with an

IOWA ROUND INCUBATOR

The incubator that rounds out the largest number of chicks per hatch every time. If you are sure of your eggs you can rest assured of the same number of chicks—strong and healthy—with the Iowa Incubator. Catalogue and prices free on request.

Iowa Incubator Co., Box 140, Des Moines, Iowa



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O-HI-O COOKER & OIL STOVE CO.,

656-660 JEFFERSON AVENUE, TOLEDO, OHIO, U. S. A.

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We can save you the services of a cook or make a good cook out of a poor one. Saves you 50 per cent. in fuel, labor and time. Insures you deliciously cooked, easily digested, never spoiled, steaming hot meals, all cooked over one burner.

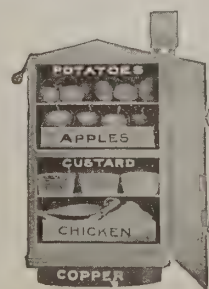
GRAND FOR CANNING FRUIT.

Orders Promptly Filled Direct or Through N. Y. Commission Houses.

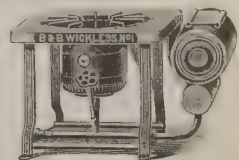
In latter case, send us duplicate order to avoid errors.

Agencies Wanted in All Trade Centers of the World.

We manufacture a full line of **OIL STOVES** that make a good seller in connection with cookers. Write for Catalogue and Discount.



\$3.50 up.



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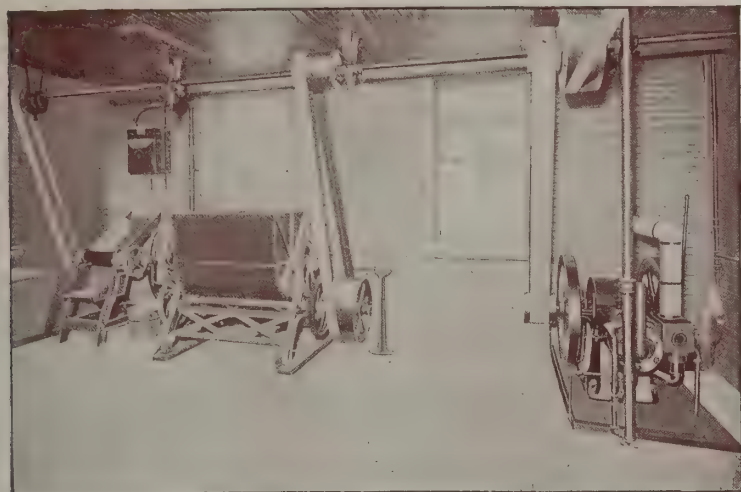
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				Woolsey Paint & Color Co.....	43
				World Polish Mfg. Co.....	43
				York Mfg. Co.....	31
				Yost Typewriter Co.....	43



We illustrate herewith a Convenient Arrangement for the Baker's Workshop.

The machine at the left is our **No. 2 Dough Brake**, the next our **1½-barrel Dough Mixer**, and on the extreme right our **7½-H. P. Gas Engine**. The cost of this outfit, including pulleys, shafting and freight f. o. b. New York, boxed, is **\$686.00 (£140)**.

The floor space is 18x6 feet.

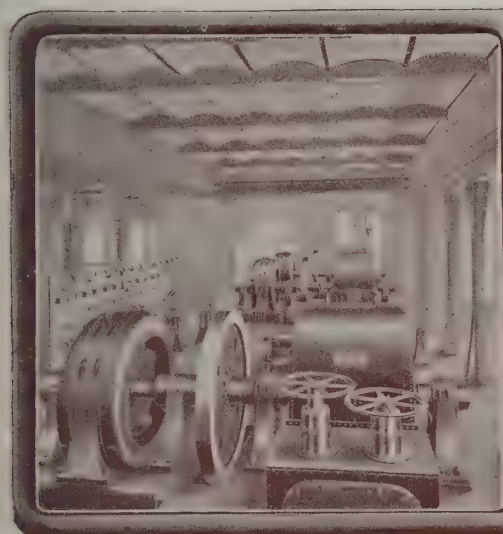
Net weight of engine, 2568 pounds; gross weight, 3070 pounds; box dimensions, 46x66x45 inches.

Net weight of dough brake, 667 pounds; gross weight, 967 pounds; box dimensions, 31x48x50 inches.

Net weight of mixer, 1368 pounds; gross weight, 1675 pounds; box dimensions, 76x36x52 inches.

WRITE TO US FOR FULL PARTICULARS AND PRICES ON LARGER SIZES.

THE J. W. RUGER MFG. CO.,
BUFFALO, N. Y., U. S. A.



PELTON WATER WHEELS

PIKES PEAK POWER CO.

The illustration herein shown is that of Pikes Peak Power Co.'s Hydro-Electric Transmission Plant, located near Victor, Colorado. It consists of three 1,000-horsepower Pelton Wheels, operating under 1,180-foot head and direct-connected to electric generator.

This electric power is supplied to the many mines, mills and other industries in that vicinity. This plant has been running day and night for four years at practically no expense for repairs. Send for catalog illustrating many other plants of similar character.

PELTON WATER WHEEL CO.

150 Liberty Street, New York.

128 Main Street, San Francisco.

PAINTING BY MACHINERY.

THE SPRAY PAINTER.

FOR APPLYING ANY KIND OF PAINT OR WHITEWASH.

Over 30,000 of Our Painting Machines in Actual Use. More than all other styles combined.

Read the following from one of the largest painting contracting firms in the United States:

St. Louis, Mo., January 30, 1904.
THE HOOK-HARDIE COMPANY, Hudson, Mich.:

Gentlemen—In reply to your letter of the 25th inst., our contracts on the buildings of the Louisiana Purchase Exposition amount to something over 12,000,000 square feet, all of which is practically completed at this writing, and at least 95 per cent. of this work was done with the machines we bought from you. We examined all of the machines on the market and tested quite a few, finally deciding on your machine and one made by another firm. Shortly after starting work we dropped the other machine entirely on account of the large amount of time lost by the machine getting out of order. We also ran two lines of hose from your machine without increasing the number of men on the pump, something we could not do with any of the other machines, thus increasing the efficiency of both machine and men employed 100 per cent.

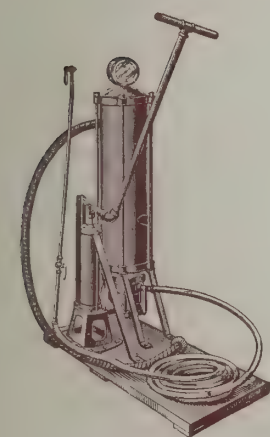
We take pleasure in stating that, in our estimation, your machine is far superior to anything on the market.

The cold-water paint used amounted to almost 400,000 pounds.

Respectfully yours, BUILDERS' CONTRACTING COMPANY.

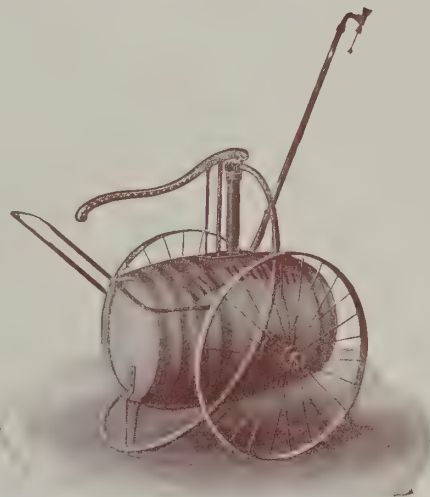
SPECIAL OFFERS FOR EXPORT:

Hook's "Best" Pneumatic Painting Machine (twenty-five of which were used in painting the buildings of the Louisiana Purchase Exposition), equipped with 25 feet pneumatic hose, 8-foot extension rod, for reaching ceilings and overhead work, and two nozzles. Gross weight, 250 pounds. Net weight, 125 pounds. Size of box, 20½x19½x47 inches. **Price, each, \$25.00.**



Hook's "Best" Pneumatic Painting Machine.

Hardie's No. 7 Painting Machine comprises a patented brass pump with brass ball valves, ingenious agitator and paint mixer, contained in a 30-gallon barrel, mounted on wrought-iron wheels, 26 inches in diameter, with 1½-inch tires, and is as easy to wheel as a baby carriage. It is equipped with 10 feet of high-grade ½-inch hose, long extension rod and special disgoring painting nozzle. Will spray any liquid of a sprayable nature. Weight, 110 pounds. Packed in two cases—one 9 cubic feet, one 7 cubic feet. **Price, each, \$17.50.**



Hardie's No. 7 Painting Machine.

The prices above quoted (U. S. Gold) include packing and delivery at New York City.

THE "STAY-THERE" READY-MIXED COLD-WATER PAINT

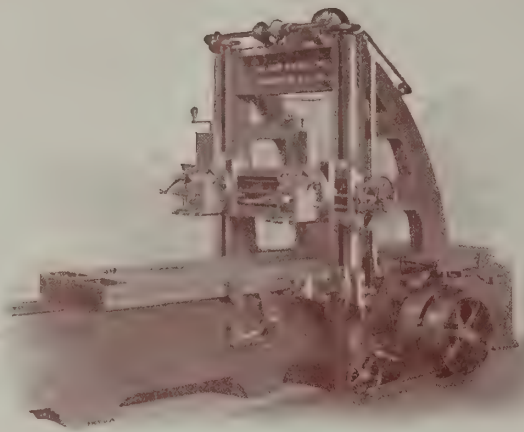
is composed of minerals ground in a liquid chemical, to be thinned with water. Packed in tight, iron-hooped barrels. It is as durable as oil paint; is fireproof, weatherproof, washable and sanitary.

SPECIAL OFFER FOR EXPORT.

Interior Paint (white), per ton of 2,000 pounds net, - - **\$30.00** Exterior Paint (white), per ton of 2,000 pounds net, - **\$50.00**

Packed in barrels weighing about 400 pounds, measuring 28 x 28 x 20½ inches. These prices are F. O. B. dock at New York City.

THE HOOK-HARDIE CO., MANUFACTURERS, **Hudson, Mich., U. S. A.**
Cable Address, "Besthook," W. U. Code.



60-inch Pond Planer.

Pond Planers are built in twenty-one sizes, taking from 26 to 170 inches square between housings; for planing any length.

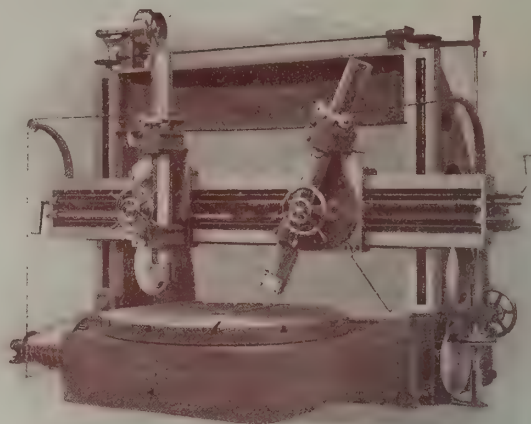
Machine Tools. Electric Traveling Cranes.

Complete Equipments

FOR

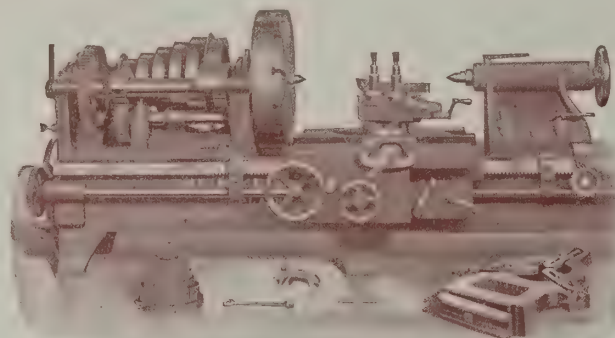
Machine Shops, Railway Shops
and Shipyards.

Send for Illustrated Catalogue,
stating kind of machine in
which you are interested.



**10-foot Niles Boring and Turning
Mill.**

Niles Boring and Turning Mills are built in twenty-five sizes, from 30-inch to 30-foot swing.



32-inch Pond Triple-Geared Lathe.

Pond Lathes are built in twenty-four sizes, from 22 to 84 inches swing over the ways; turning any reasonable length.

NILES- BEMENT- POND CO.,

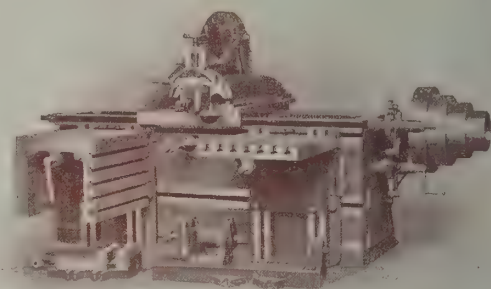
136-138 Liberty Street,
New York, U. S. A.

London Office: 23-25 Victoria Street.

CABLE ADDRESSES:

"Nilesco," New York.

"Niliacus," London.



26-inch Bement Shaper.

Bement Traveling Head Shaping Machines are built with one or two heads, in four sizes, from 12 to 26 inch stroke.

LANE MANUFACTURING CO., Montpelier, Vermont, U. S. A.

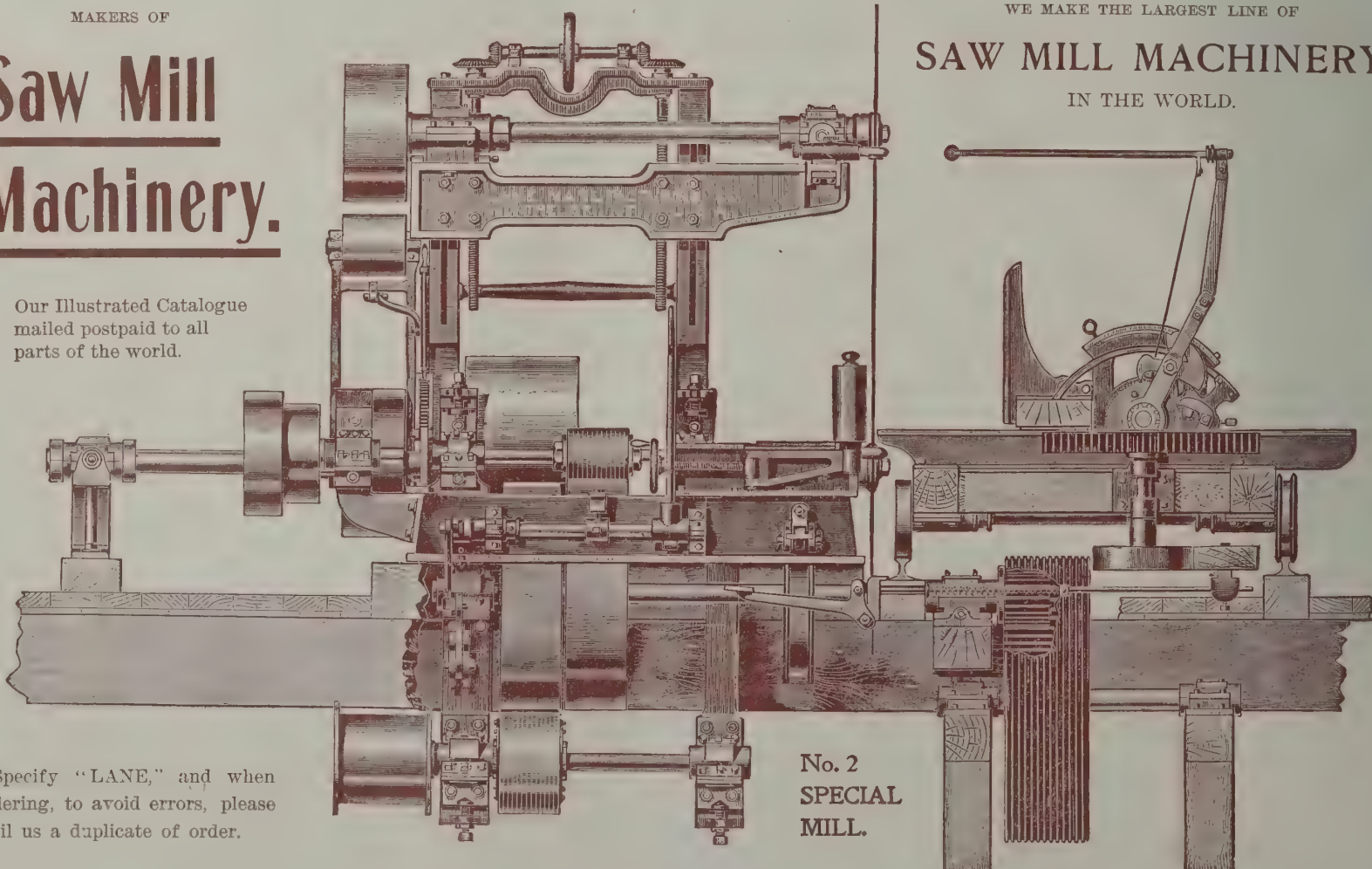
MAKERS OF

Saw Mill Machinery.

Our Illustrated Catalogue
mailed postpaid to all
parts of the world.

WE MAKE THE LARGEST LINE OF

SAW MILL MACHINERY IN THE WORLD.



Specify "LANE," and when
ordering, to avoid errors, please
mail us a duplicate of order.

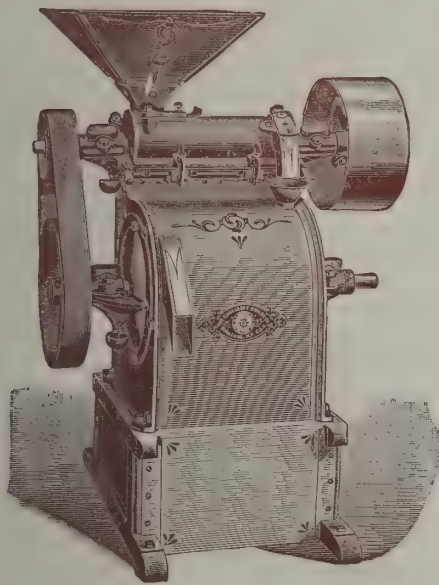
No. 2
SPECIAL
MILL.

The American Exporter

WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIV. NEW YORK, JUNE, 1904. No. 1.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

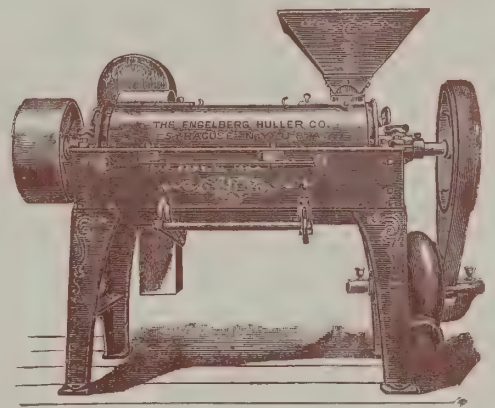


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

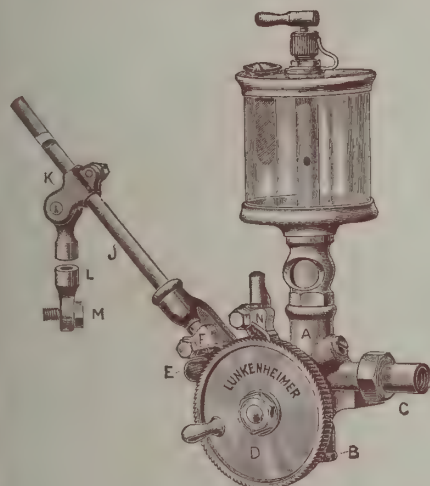
Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the **Only** machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.



Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

THE ENGELBERG HULLER COMPANY, P. O. Box B,
Syracuse, N. Y., U. S. A.
Export Office: 333 Produce Exchange, New York City.



Lunkenheimer Mechanical Oil Pump.

A Mechanical Oil Pump to be a success should embody the following principles: It should be simple, practical, well made, durable, reliable, absolutely positive, and devoid of clapptrap mechanism.

The Lunkenheimer Mechanical Oil Pump Possesses All the Above Features.

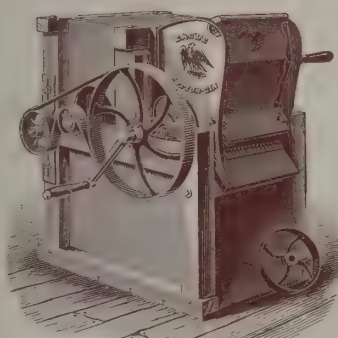
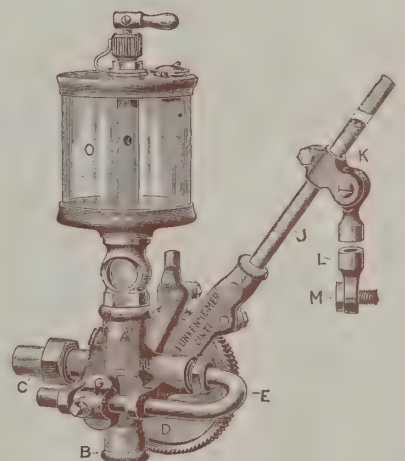
It touches the spot and puts the oil where it is needed. Every pump rigidly tested and inspected before shipment. Specify "Lunkenheimer" make, and order from any leading export house. - Write for Catalog of Brass and Iron Valves, Injectors, Whistles, Lubricators, Oil and Grease Cups, Etc., all of superior quality.

THE LUNKENHEIMER CO.

SOLE MAKERS,

CINCINNATI, OHIO, U. S. A.

BRANCHES: NEW YORK, 26 Cortlandt Street; LONDON, 35 Great Dover Street, S. E.

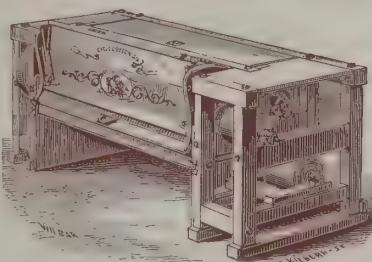


Hand Gin.

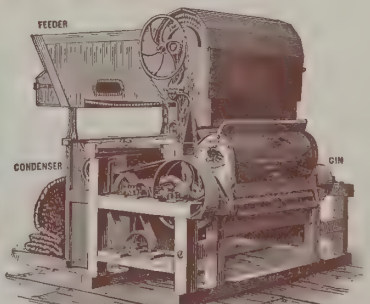
EAGLE COTTON GINS.

These Gins enjoy a **BETTER REPUTATION** THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are **PREFERRED** to all others made, on account of their **STRENGTH, SIMPLICITY, DURABILITY,** the amount and **EXCELLENCE** of the work they accomplish, and the **RAPIDITY** of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws



Power Gin with 10-inch Saws, with Feeder and Condenser.

CONTINENTAL GIN CO., Inc., Successors to **EAGLE COTTON GIN CO.,**
BRIDGEWATER, MASS., U. S. A.

Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

BEWARE
OF
IMITATIONS



BEWARE
OF
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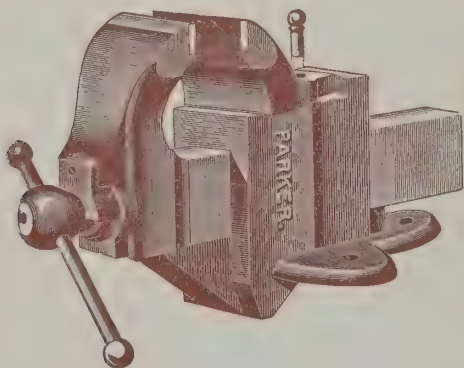
Sold All Over the World. Order through your Commission Men.

STEWART HARTSHORN CO.

Office and Factory:

EAST NEWARK, NEW JERSEY, U. S. A.

Stockroom: No. 7 Lafayette Place, New York.



THE
Parker Vise

Unequaled for
Strength, Durability
and Finish.

Has stood the test of over
50 YEARS.

EVERY VISE MADE FOR
SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP
USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over 60 YEARS and will stand comparison with any Mill in the market.

We manufacture a line of
Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

Enquiries concerning our line will have prompt
attention. Catalogues on application.

THE
CHAS. PARKER CO.,
MERIDEN, CONN., U. S. A.

NEW YORK SALESROOM: 96 CHAMBERS STREET



DIETZ
Nos. 30 and 60
TUBULAR
SEARCH
LIGHTS.

These lamps are made for outdoor or indoor use. They give a powerful and brilliant light, and are not affected by the wind.

They are suitable for use in mills, workshops, warehouses, stables and summer resorts, or in any other place where a good light is required which will not be affected by strong breezes.

Where it is desired to light up a long row of animals or a long, narrow room of any kind, these lamps are especially desirable.

No. 30 is fitted with our patent bull's-eye lens on perforated plate, adding to the appearance of the light.

No. 30 has a blizzard globe, 1-inch wick and a bright tin reflector 12 inches in diameter. Price, \$30.00 dozen.

No. 60 has a No. 2 globe, 1 1/4-inch wick and a bright tin reflector 16 inches in diameter. Price, \$72.00 dozen.

We are pleased to send complete catalogues (Spanish or English) and price list to those interested.

**R. E. DIETZ
COMPANY,**

NEW YORK, U. S. A.

Established 1840.



ARCADE MANUFACTURING CO.

(Incorporated 1885.)

Manufacturers of

"Crystal," "Imperial," "Jewel," "X-Ray," "Telephone,"
"Royal Pound," "New Home" and "Favorite"

Coffee Mills.

ALSO

"Champion," "Handy" and
"Phoenix" Cork Pullers

AND

"Perfect" Lemon Squeezers.

BOTH ENTIRELY NEW.
THE HOUSEKEEPERS' DELIGHT.

THE "CRYSTAL"—A One pound Coffee Mill, Transparent (Glass) Hopper; Transparent (Glass) Receiver. Coffee always in sight. **Sample Dozen**, boxed ready for steamer F. O. B. cars New York, \$6.50. Size of box, 1 1/4 x 2 1/4 x 29 in. Weight: gross, 134 pounds; net, 80 pounds.

Orders received through
export houses.
Please mail duplicate
order to us.
Our illustrated catalog
mailed postpaid.

THE "CRYSTAL."

"IMPERIAL," No. 705—
A Sunk Hopper, All-Iron Top Mill, with Hinged Cover and Top Handle, Hardwood Box and Dovetailed Corners. **Sample Dozen**, boxed ready for steamer, F. O. B. cars New York \$4.00 Size of box, 15x16x20 3/4 in. Weight: gross, 64 pounds; net, 48 pounds.

**ARCADE
MANUFACTURING CO.,**
Hardware Specialties
Manufacturers,

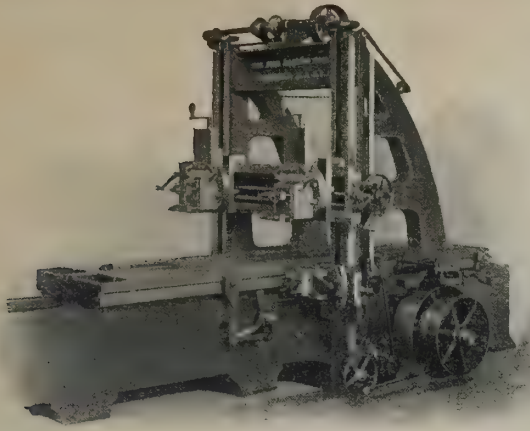
Freeport, Illinois, U. S. A.



New
Design.

Improved
Pattern.

"IMPERIAL" No. 705.

**60-inch Pond Planer.**

Pond Planers are built in twenty-one sizes, taking from 26 to 170 inches square between housings; for planing any length.

Machine Tools.

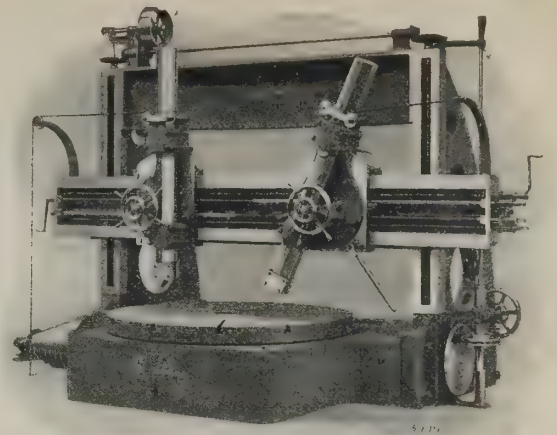
Electric Traveling Cranes.

Complete Equipments

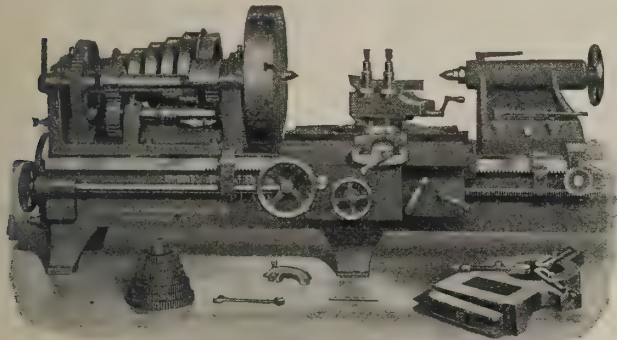
FOR

Machine Shops, Railway Shops
and Shipyards.

Send for Illustrated Catalogue,
stating kind of machine in
which you are interested.

**10-foot Niles Boring and Turning
Mill.**

Niles Boring and Turning Mills are built in twenty-five sizes, from 30-inch to 30-foot swing.

**32-inch Pond Triple-Geared Lathe.**

Pond Lathes are built in twenty-four sizes, from 22 to 84 inches swing over the ways; turning any reasonable length.

NILES- BEMENT- POND CO.,

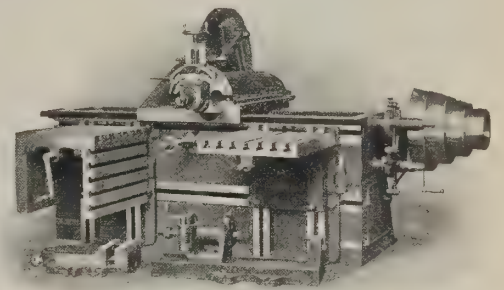
136-138 Liberty Street,
New York, U. S. A.

London Office: 23-25 Victoria Street.

CABLE ADDRESSES:

"Nilesco," New York.

"Niliacus," London.

**26-inch Bement Shaper.**

Bement Traveling Head Shaping Machines are built with one or two heads, in four sizes, from 12 to 26 inch stroke.

GRAND RAPIDS DESK COMPANY, Manufacturers of HIGH-GRADE DESKS OFFICE HOME FOR EXPORT.

ESTABLISHED 1880.

ESTABLISHED 1880.



Send for **Net Export**
Prices, which include box-
ing and delivery F. O. B.
New York.



OUR NEW ROLL-TOP DESK.

No. 516.

PRICE, \$170.00

Our 100-Page Catalogue,
illustrating and describing
the many styles of **DESKS**
made by us, mailed post-
paid to all parts of the world.

NEW DESIGNS.

SUPERIOR WORKMANSHIP.

SUPERB APPEARANCE.

Our New Line of Desks, for All Uses, Recently Placed Upon the Market, Embody the Results of Over 23 Years' Practical Experience in Actual Manufacturing.

GRAND RAPIDS DESK CO., MUSKEGON, MICH., U. S. A.

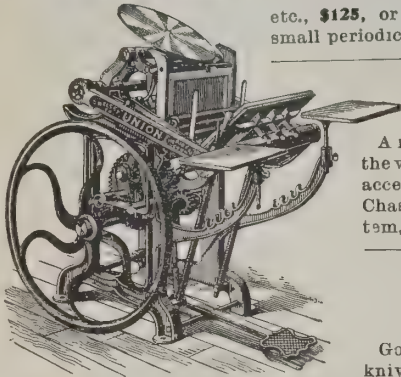


CHEAP PRINTING.

Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., \$40.00.

10x15-inch Press, with 10 styles of type, ink, etc., \$125, or with more type, rules, etc., for small periodical, \$200.

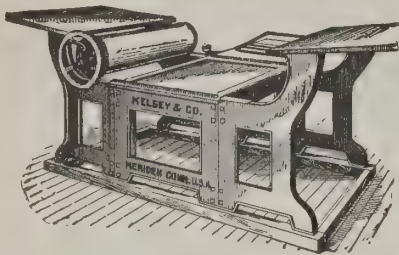


PRESS UNION.

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, \$200. Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., \$400, outfit included.

CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, \$12.00.



Cylinder Press.

For newspaper and large announcements. Bed, 29x43 inches. Price, \$500. Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages, paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.

C. L. HAUTHAWAY & SONS,

346 Congress St., Boston, Mass.,
U. S. A.

Specialties.



Regular
4-oz. Bottle.

Best dressing put up and warranted in all respects.



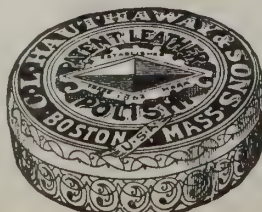
Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

For polishing patent leather shoes quickly and without injury to the leather.



"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the



WHITE LILY WASHER.
WASHES LILY WHITE.

White Lily Washer.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is 2½ turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** (\$30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**

Weight, 600 lbs. Measurements; 18x24x24 inches.

WHITE LILY WASHER CO.,

MANUFACTURERS,
DAVENPORT, IOWA, U. S. A.

LOVELL MFG. CO.

Erie, Pa., U. S. A.

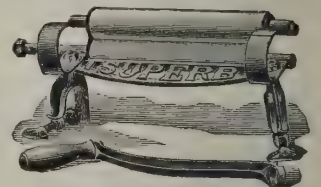
Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS, RAT and MOUSE TRAPS.



Send for
Catalogue
and
Prices.



We make a full line of
CLOTHES WRINGERS
for the Export Trade



Delusion
Mouse Trap.

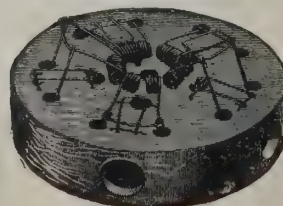


Rex Trap.
Made in two sizes:
large size for rats;
small size for mice.



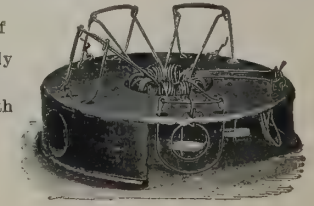
Erie Rat Trap.
Best Trap on Earth.

Requires no setting. **RAT TRAPS**—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch," "MOUSE TRAPS"—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker," "Easy Setting Wood Choker," "Cyclone," "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of
Wringers
in English only
and of Rat
and Mouse
Traps in both
English and
Spanish.



Lovell's Easy-Setting Metallic Mouse Trap

BORN & CO.**Columbus, Ohio, U. S. A.****ONE OF A DOZEN**good reasons why
you should drink**Born's****XX PALE BEER**is because it is
brewed from the
best materials.**A GOOD SPRING TONIC.**

REVISED

We are prepared to ship in any quantity, and earnestly solicit your orders direct to our offices, or through any responsible export merchant. Satisfaction guaranteed.

BREWERS and EXPORTERS of**BORN'S CELEBRATED XX PALE and
MUENCHNER BEERS.**

The Absolute Purity and Superior Flavor of Our Beers
Are Universally Acknowledged.

For Immediate Delivery We Make Introductory Offers as Follows:

OFFER No. 1.

3 doz. quarts Born's Muenchner, packed in barrel	\$10.00
3 " " " " " " " " " " " "	net cash, F. O. B., N. Y.
5 doz. pints Born's Muenchner, packed in barrel	\$10.00
5 " " " " " " " " " " " "	net cash, F. O. B., N. Y.

OFFER No. 2.

6 doz. quarts Born's XX Pale, or 6 doz. quarts Born's Muenchner, packed in barrels, \$10.00 net cash, F. O. B., N. Y.
10 doz. pints Born's XX Pale or 10 doz. pints Born's Muenchner, packed in barrels, \$10.00 net cash, F. O. B., N. Y.

OFFER No. 3.

One car lot (130 bbls.), \$9.00 per barrel, F. O. B., N. Y.

CONTINENTAL CAR AND EQUIPMENT CO.

FOREIGN DEPARTMENT:

Whitehall Building, Battery Place, New York, U. S. A.

Cable Address: "CONEQUICO," New York.

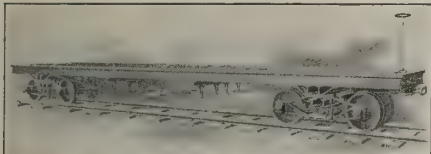
MANUFACTURERS OF

**Railway Freight, Plantation,
Industrial and Mining Cars.**

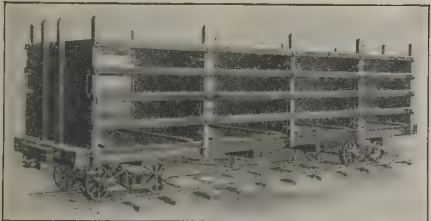
We also make Special Cars for all purposes, from designs furnished, or will furnish our own designs upon request
FOR FOREIGN MARKETS.—Our Cars are taken apart and packed for shipment according to the best known methods.

Our Catalogue (English and Spanish), illustrating and describing the various styles of STANDARD CARS made by us, mailed postpaid.

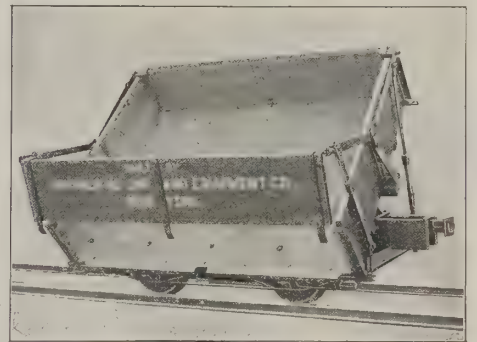
Please mention THE AMERICAN EXPORTER.



ALL-STEEL FLAT CAR.



CUBAN CANE CAR.



This cut shows our modern Dumping Car. It dumps on both sides of the track and is built strongly for hauling and dumping dirt, rock, sand, clay, ore, etc. Built in all capacities from 1 to 5 cubic metres.

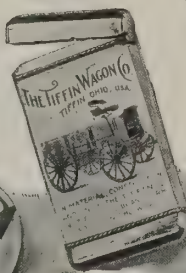


CELLULOID
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NOVELTIES,
SIGNS,
BUTTONS,
MEDALLIONS,
BADGES
AC.

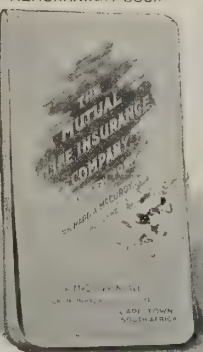
TAP MEASURE



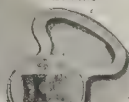
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MEMORANDUM BOOK



KEY RING



ADDRESS, EXPORT DEPT.

**BALTIMORE
BADGE & NOVELTY
COMPANY,**

BALTIMORE, MD., U.S.A.



CATALOGUE, ESTIMATES AND SPECIAL DESIGNS ON APPLICATION.

INQUIRY OFFICE FOR NORWAY, SWEDEN
AND DENMARK.

COLLECTION OF CLAIMS.

ASK FOR TERMS.

HEFFERMEHL & CO.,ESTABLISHED
1895.**KRISTIANIA, NORWAY.****BARNEY COMPOUND VENTILATING WHEEL.**

For Removing Dust, Smoke, Steam, Heat, Foul Air, Gases. For Drying and Ventilation.

Branches in
France, Canada, Mexico.

SOLE AGENTS IN SCANDINAVIA:

GOTHENBERG MACHINE CO., GÖTEBORG, SWEDEN.

BARNEY VENTILATING FAN WORKS, Dept. E,

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The Leonard Cleanable Refrigerators

Freely Acknowledged to Be the Best in the World.
Made in Grand Rapids, Mich., U. S. A.



No. 498. No. 070.

No. 73.

No. 4. No. 6.

Single door, zinc lined.
No. 498—Size, 23x15x37\$5.25
No. 070—Size, 25x17x40 7.70

Double door, zinc lined.
No. 73—Size, 33x20x46\$13.10

Three doors, lined with real Porcelain on sheet steel.
No. 4—Size, 35x22x46\$22.75

Four doors, lined with real Porcelain.
No. 6—Size, 42x23x54\$33.95

Orders received through any exporter in New York, Boston, Philadelphia or Baltimore, or through our own Export Office, 54 Warren Street, New York. E. L. D. Hester, Mgr.

Our Catalogue, illustrating and describing the various styles of Refrigerators made by us, mailed postpaid to all parts of the world.

Seven walls to save the ice. Airtight locks. Sliding, adjustable shelves, and many other improvements. Outside cases, ash with quarter-sawn oak panels, dark golden finish. Walls packed with mineral wool.

These prices F. O. B. New York, Boston, Philadelphia or Baltimore, crated for export. The sizes given are: first, width across the front; second, depth from front to back; third, height. All outside measurements in inches.

GRAND RAPIDS REFRIGERATOR CO., Grand Rapids, Michigan, U. S. A.



ONCE SOLD, THEY NEVER COME BACK.

OCEAN WAVE WASHERS

Wash the clothes as easily and cleanly as sea waves wash the beach.

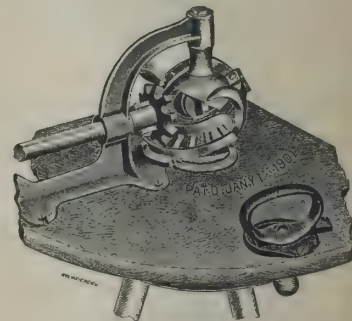
OVER 100,000 NOW IN USE.

Shipping weight, 85 lbs.

Size, 2 x 2 x 3—12 cubic feet.

SPECIAL FEATURES.

Our Gearing: Simple in construction; impossible to throw out of gear; the longer it is used the easier it will run. Our Fly Wheel has no threads to strip; no nuts to lose, being attached or detached in a moment's time. Our Improved Dasher is hand-turned; clothes do not cling to it and tear. We assure free action of dasher by using heavy galvanized flanged ring in dasher block, thereby relieving all friction. In general construction of tub and finish, only best materials are used. We ship through any responsible New York exporter. All orders must be sent to us direct.



THERE IS NO FRICTION.
NO LOST MOTION.

VOSS BROS. MFG. CO.,
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MANUFACTURERS AND EXPORTERS OF

Solid Sole Leather Washers.

Axle Washers for All Foreign and Domestic Axles.

All Kinds of Plumbers' and Special Washers.

Orders Filled Through Commission Houses.

Correspondence Solicited.

Catalogue B on Application.

There's Never a Slip

with the Foster Rubber Heel. The Friction Plug prevents slipping and makes the heel wear longer. Foster rubber heels and soles possess all the recognized good points of the ordinary make—with several new and distinctive features that make them unquestionably the best to buy. Cost no more. At your shoe man's.



Dealers Supplied by

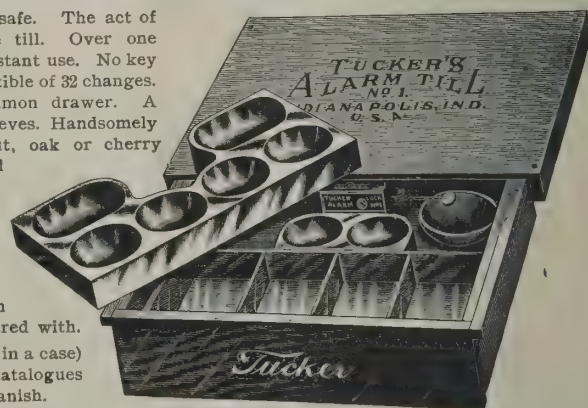
FOSTER RUBBER CO., BOSTON, MASS.,
U. S. A.

The Tucker Alarm Cash Till.

A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

As a piece of cabinet work, well worth its cost.

Sounds the alarm promptly if tampered with. Delivered (1/2 doz. in a case) free to vessel. Catalogues in English and Spanish.



TUCKER & DORSEY MFG. CO., Indianapolis, Ind., U. S. A.
Selling Agents: John H. Graham & Co., 113 Chambers St., New York City.



PAUL MFG. CO.

Manufacturers and Exporters of

CANDO Silver Polish

Best in the World for Cleaning and Polishing Gold, Silver, Cut Glass, Nickel and Plated Ware.

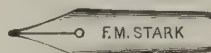
N. B.—CANDO is free from all injurious substances, being a rapid cleaner and brilliant polisher.

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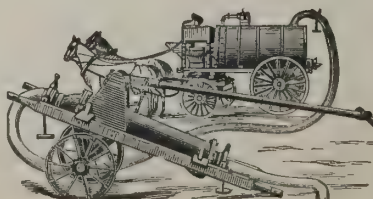


Manufacturer of

Fine Gold Pens.

ALL SHAPES AND STYLES.

Correspondence solicited. Order direct or through commission houses.



The Odorless Excavating Co.

Manufacturers and Exporters of

ODORLESS PUMPS AND APPARATUS.

Orders Filled Through Commission Houses.

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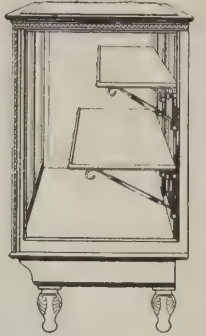
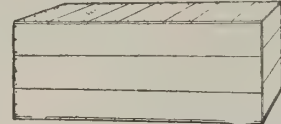
Boston, Mass., - - - U. S. A.

KNOCK-DOWN SHOW CASES FOR EXPORT.

SHOW CASE No. 31 is our leader for foreign markets, and is just the thing for displaying furnishing goods, chemists' sundries, dry goods; in fact, is well adapted for the display of any line of goods.

SHOW CASE No. 31 "set up" (ready for use) is 8 feet long, 42 inches high and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength A sheet glass in fronts, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with 2 wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

Our catalogue, illustrating and describing the various styles and sizes of Knock-Down Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.



8-Foot No. 31 Show Case.

Showing end view of an 8-ft. No. 31 Show Case set up for use, and an end view of the same case, knocked down and boxed for shipment. Weight, 884 lbs., gross; 248 lbs., net; cubic measurement, 28 cubic feet. Securing lowest possible freight rates.

GRAND RAPIDS FIXTURES CO.

GRAND RAPIDS, MICHIGAN, U. S. A.

BALKE MANUFACTURING CO.,

Patentees and Manufacturers of

Balke Combination Davenport, Billiard and Pool Tables, and Standard Tables.

INCORPORATED \$100,000.



Style "A," as a Davenport.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note - The prices here quoted, U. S. Gold or its equivalent, are for Foreign Markets Only, and include boxing ready for steamer, delivered f.o.b. cars at New York City.

Style "A," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

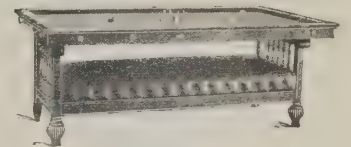
Style "A," converted into a Billiard or Pool Table, has a playing surface of 3½x7 feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, \$95.00. Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: 4'x8'x6'; 32'x36'x6'.

Standard Billiard Tables.

"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4x8 feet. Price complete, \$125.00. Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: 4'2"x8'2"x8'; 4'x8'2"x2'.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, 3½x7 feet. Price complete, \$90.00. Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: 4'x8'x8'; 3'6"x6'x2'.

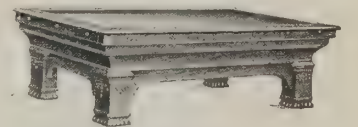
Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order. Our catalogue, illustrating and describing the various styles of Billiard and Pool Tables manufactured by us, mailed postpaid.



Style "A," converted into a Billiard Table.



Benedict Special Billiard Table.



"Den" Special Billiard Table.

BALKE MANUFACTURING CO., Grand Rapids, Mich., U. S. A.

MICHAEL'S PORCH AND LAWN RECLINING CHAIR.

"THE MOST COMFORTABLE, PORTABLE RECLINING CHAIR IN EXISTENCE."

BY THE EASIEST AND SIMPLEST MOVEMENT OF THE BODY THIS CHAIR WILL ASSUME ANY DESIRED POSITION.

Combines all that is required for comfort, ease and rest. Beautiful, durable and compact. Better and cheaper than a hammock. Made of the best material obtainable, and cannot become affected by climatic changes.



SPECIAL OFFER

TO INTRODUCE IN ALL FOREIGN MARKETS OF THE WORLD.

Upon receipt of Twenty-one Dollars and Fifty Cents (\$21.50) in U. S. Gold, or its equivalent, we will crate, ready for transportation abroad, and deliver F. O. B. New York City,

TWELVE (12) MICHAEL'S PORCH AND LAWN RECLINING CHAIRS.

Each chair weighs but seventeen (17) pounds. Twelve (12) chairs weigh two hundred and four (204) pounds. Crated, ready for transportation abroad, twelve (12) chairs weigh two hundred and twenty (220) pounds.

THE QUICKEST SELLING ARTICLE OF ITS CLASS EVER PLACED UPON THE HOME OR FOREIGN MARKET.

MADE ONLY BY

C. H. MICHAEL MFG. COMPANY,
LA PORTE, INDIANA, U. S. A.

Established 1868

Cable Address: "MICHAEL," Western Union Code.

GEO. L. SQUIER MFG. CO. OF BUFFALO,

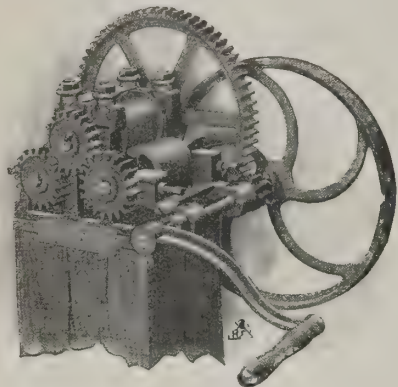
Manufacturers of
"American"

Sugar, Coffee and Rice Machinery,

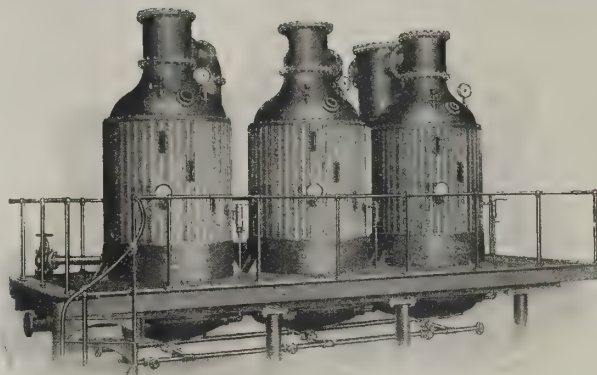
**BUFFALO, N. Y.,
U. S. A.**

Estimates cheerfully furnished on Complete
Plantation Outfits.

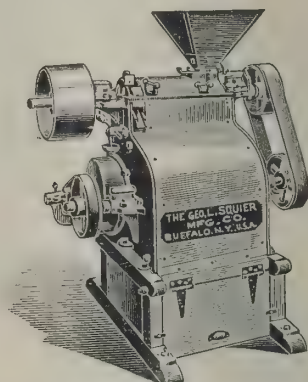
Correspondence solicited
in any language.



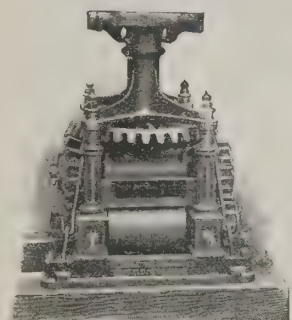
No. 2. "PIONEER" Hand-Power Cane Mill.



Multiple Evaporating Vacuum Effects. All capacities.

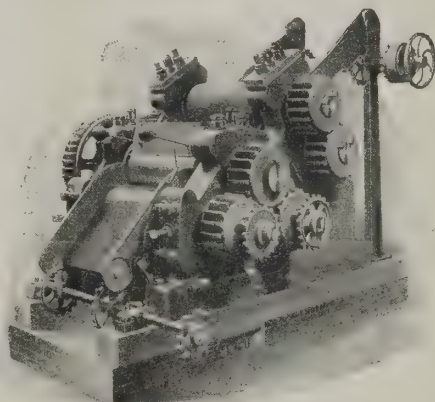


"PARAGON" Rice Huller and Polisher.
Capacity 4,000 to 6,000 pounds
in twelve hours.

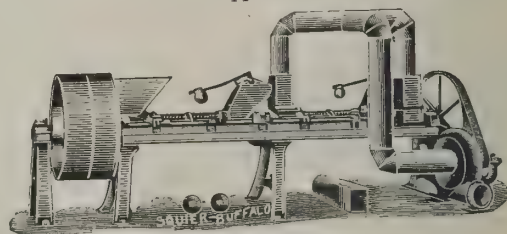


"PEARL" Horizontal, Animal-Power
Cane Mill. Ten sizes.

Write
for
Latest
Sugar-Cane
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"CUBA" Three-Roll Mill and Two-Roll Crusher. All sizes.



"AMERICAN" Coffee Huller No. 3.

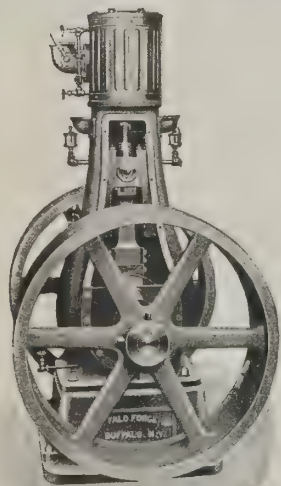
BUFFALO AUTOMATIC ENGINES.

HIGH SPEED, HIGH GRADE,
Horizontal, Vertical,
Simple, Compound,
Direct-Connected.

Buffalo Portable Forges.

AMERICA'S BEST.
THE WORLD'S STANDARD.

60-types and sizes-60
Adapted to all
grades of work.

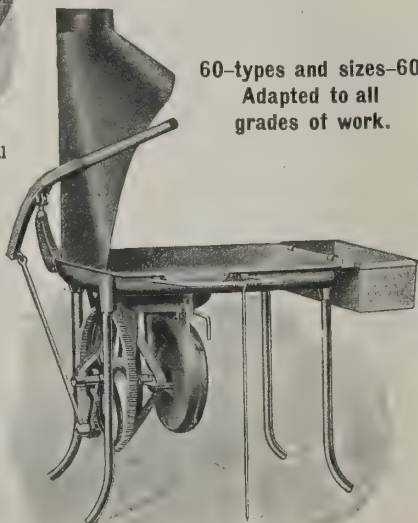


"BUFFALO" Single Vertical
Engine.

Buffalo Engines

Excel in
Simplicity of Design,
Durability of
Construction and
High Steam Economy.

The highest grades of
material and workman-
ship obtainable are used
in their construction.
Write for latest cata-
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ing.



"OLD RELIABLE" Buffalo Blacksmith's Forge No. 0.

BUFFALO STEAM PUMPS.

PUMPS for every known duty.

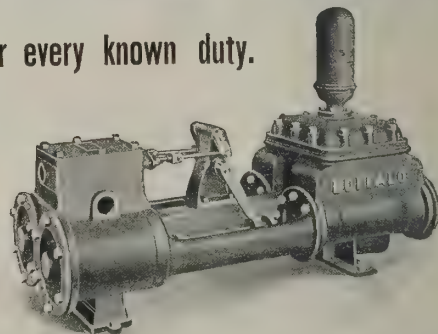
FOR

Sugar Houses,
Mills,
Factories and
Plantations.

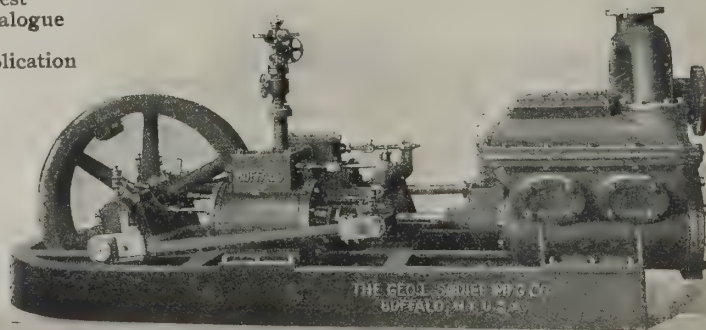
WATER, JUICE AND
SYRUP PUMPS.

HIGH-GRADE STEAM AND POWER PUMPS.
SINGLE, CYLINDER, INDEPENDENT AIR PUMPS
AND JET CONDENSERS.

Latest
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"BUFFALO" Boiler Feed Pump.



"BUFFALO" Fly-Wheel Vacuum Pumps. Simplex or Duplex Styles. All sizes.

BUFFALO FORGE COMPANY, Buffalo, N. Y., U. S. A.



[Founded by ROOT & TINKER, 1877],

WITH WHICH IS INCORPORATED

THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by HOWARD LOCKWOOD & Co., 1877.]

THE JOHN C. COCHRAN COMPANY, - - - Publishers.
Bennett Building, New York.

EDWARD W. DREW, - - - Editor.

Published on the 1st of each month.

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Entered at the New York Post Office as Second-class Matter.

AMERICAN SHIPBUILDING.

WE frequently receive communications from associations interested in the upbuilding of the American merchant marine. Our friends abroad are not much concerned in knowing how we do things, but are anxious to receive the goods which we manufacture and they want. We have not taken up the subject largely for that reason, except to point out that some of our American shipbuilders are doing wonderfully well. Our attention has been called to a statement by Edwin D. Metcalf, who has opposed subsidies for American ships, in which he says:

"If the shipbuilders spent more time at their work improving their methods, trying to find means to compete with British shipbuilders, and less time on the steps of the Capitol at Washington, or in committee rooms, the United States would be building ships for the whole world. In one of the interests in which I am engaged we use exactly the same materials that the shipbuilder does; we use American labor, union labor, high-priced labor; we use protected steel, protected iron, protected lumber; we use protected paints and oils and varnishes, and everything that goes into a ship, and yet we are able to export our line of goods, and not only to build them for this country, but build them for the whole world. In this one industry which I represent, we exported \$23,000,000 worth of goods last year, produced out of the same materials, under the same circumstances and same conditions as the shipbuilding interests can work, and why they don't take hold in earnest to find ways to compete with the British shipbuilder I cannot understand, because we sell our goods right in Great Britain."

Mr. Metcalf's statement gives evidence of the fact that he himself is a typical American—a man who *does* things. There are American shipbuilders also who are *doing* things. They are building some of the largest ships ever launched, and we must confess that while we favor any movement to advance American interests, we cannot avoid thinking that Mr. Metcalf's view of action instead of talk will solve the problem, so far as active Americans like James J. Hill and others of his stamp and character have not already disposed of the subject.

OUR EGYPTIAN VISITOR.

ABBAS II, the Khedive of Egypt, appears to be the only ruler of the Old World who will visit America this summer in connection with the World's Fair at St. Louis. The young king sailed last month, and his arrival is awaited with interest. Abbas II has entertained many visitors from the United States, and the reputation comes before him to the effect that he is a thoroughly enlightened monarch. To his tutoring by an Oxford graduate may be ascribed the foundation for his subsequent progressiveness. Abbas II will find much to interest him—perhaps astonish him—during his tour of the United States, and judging by what we have

learned of him, the result cannot fail to be closer trade relations between Egypt and the United States. The Khedive will certainly receive a cordial welcome, and will be given every opportunity to study our methods and observe the progress which this country is making in the arts of peace.

In another column of this issue, and in previous issues, we have pointed out the need of better steamship communication between Egypt and the United States. The American Department of Commerce is investigating the question, and will doubtless soon make a report on the subject, but the solution of the problem is unquestionably the simple one of: More American ships. Perhaps the visit of the ruler of Egypt may awaken greater interest in this direction.

TELEGRAPHY BY TYPEWRITER.

SIXTY years ago last month the first telegraph message was successfully sent. All of our readers know how the system has grown in its usefulness to trade and how it has been improved; they know all about the developments in the direction of new ocean cables and the achievements of American and other inventors who have made wireless telegraphy more than a dream, even if they have not been able to put it into general commercial use. But really the most important recent discovery in this direction—one which will doubtless postpone, if it does not do away with, the necessity or commercial feasibility of the wireless for land purposes—is announced upon the occasion of the sixtieth anniversary of the sending of the first message. A report of the new invention is given on another page of THE AMERICAN EXPORTER.

The inventor is a prominent official of the principal telegraph company of the United States. He is a thoroughly practical man and his device is of the sort that we might expect him to produce. It is, in short, an improved typewriter, so arranged that any person who can operate a typewriter can send a message just as well as the skilled telegraph operator who works the key. By simply striking each typewriter letter the machine makes the necessary telegraphic dots and dashes. It is impossible to make a mistake, except by striking a wrong letter. The receiving instrument records the message automatically. We suspect that the inventor got his idea from the crude receiving machines, run with paper tape, on which telegraph messages were originally recorded in dots and dashes, before it was discovered that the ticks could be read by sound more quickly and with greater ease. However that may be the typewriter-telegraph will greatly simplify the business and add in that way at least to the progress of the age. It will, in fact, come mighty near to revolutionizing telegraphy.

WAR'S fortunes are not always on one side. Reports from the Far East show that last month Japan lost a battleship or two, sacrificing hundreds of lives, but in this case, as in that of the sinking of Admiral Makaroff's big flagship, the disaster came apparently from mines, and was not the result of open battle. At least, in neither case was there a battle or even an active engagement in progress. Whether the blows were struck by hidden mines or submarines, it is becoming more evident every month, if not oftener, that the massive battleships are floating coffins for their officers and crews, at least in times of war.

SHOES of American make are selling better than ever abroad and the trade in South America particularly is showing signs of substantial increase. Where American shoes gain a foothold, their excellent workmanship and reasonable prices invariably attract trade.

BEER as a beverage is showing increased demand in the United States. The manufacturers of one particular make, which is known to the importers of other countries, expect to put out more than 100,000,000 bottles of their best brand this year.

CONGRESS has adjourned without taking any action to extend the parcels post system. There seems to be a disinclination on the part of the United States legislators to turning the postal service into a bureau for the transmission of freight.

OUR GERMAN TRADE RELATIONS.

BERLIN'S American Chamber of Commerce is verifying the prediction which we made when it came into existence, that it would smooth rough spots in the interchange of commerce between Germany and the United States. Berlin's Chamber of Commerce has won its first victory in that direction and it is a notable one, for it involved the suspension of a United States Treasury regulation with reference to the filing of original bills of lading. The decision does not affect foreign imports of American goods, but the action taken is in the line of promoting amicable trade relations between two great countries and therefore is worthy of commendation. The Berlin Chamber had the active cooperation of the Hon. Frank H. Mason, our efficient and vigilant Consul-General at Berlin, and in thanking that official President Kreismann pays this tribute to American fairness:

"The result of the Chamber's protest to the United States Treasury Department, which we are pleased to feel was not without weight in determining the Department's action, has been widely noted in the German press as an evidence of the Chamber's readiness to serve both German and American trade interests, while the Department's broad-gauge view of the question is certain, in our opinion, to have a pleasant effect on the situation in Germany."

President Kriesmann sent the following appreciative message to Secretary Shaw, the head of the Treasury Department:

"In the name of the Board of Directors and of the members of the American Chamber of Commerce in Berlin I desire to express to your Department the appreciation of the German-American business community in this country of your action in ordering the suspension of the late ruling with reference to production of original invoices at United States consulates abroad. Your action is certain to be interpreted by German merchants and manufacturers as an evidence of the readiness of your Government to facilitate, by every legitimate means, the expanding commerce between the two nations, and this Chamber, as the active exponent of such expansion, is especially grateful for the broad-gauge view which your Department has taken of the matter in question."

WE consider this incident a noteworthy one, as showing the benefit to commerce of such organizations as the Berlin Chamber, as well as of the readiness of the United States Government to take prompt action in its administrative departments when it is possible to do so. We frequently receive communications from our subscribers abroad regarding what they consider inconsistent tariff laws or regulations. It is impossible for us to enter into tariff discussions, but we always investigate such complaints and call the attention of the proper officials to the matters mentioned. In most cases action by the Congress is necessary to change the conditions and the Congress moves slowly in its consideration of most subjects. In the executive branch of the Government, where it can be done without awaiting Congressional action, inequalities in trade relations with other countries are promptly and equitably adjusted by the United States administrative authorities. We have before us communications from several of our friends abroad, including one from our esteemed correspondent in Australia regarding the maritime regulations in relation to coastwise trade. In all of these cases it is impossible to do anything at present. The Congress is not now in session and will not be again in session until next December. The matters referred to in these communications can only be acted upon by the legislative governing body of the nation, and it is just as impossible to hurry the lawmakers in America as it is elsewhere on the globe. The American Government is actuated with liberalism and its best efforts will always be put forth to promote international trade. The people of the United States are not selfish, although they may seem sometimes to be so. They are law-abiding above everything else and when they encounter the effects of obnoxious laws they go to work to secure repealing legislation. That always takes time, but it is the only course open. Of one thing our foreign readers may rest assured: While the United States desires to promote its export trade to the fullest extent, it is equally anxious to secure the best that its foreign correspondents have to offer in return. Reciprocity is a cardinal word in the lexicon of Americans.

AMERICA'S WORLD'S FAIR.

ST. LOUIS is the scene at present of probably the finest exposition that has ever been given in the world. We have frequently anticipated the marvels which are on exhibition at the American World's Fair, but we have carefully avoided doing any advance bragging about its wonders. It is a real World's Fair. All of the nations on the face of the earth have participated, and consequently the magnificence of the exhibition is greater than even the promoters anticipated, although it must be admitted that their thoughts were even more than roseate. When it is printed that their expectations are more than realized little more need be said in that direction.

It is not our purpose to make comparison with World's Fairs held in other countries, but so many of our readers visited the Columbian Exposition in Chicago in 1893 that the differences between the two may interest them. The Chicago show cost \$20,000,000 and covered 640 acres, of which 82 acres were under roof. The present St. Louis fair, called the Ivory City, is so much greater that persons who viewed the Chicago fair will hesitate to believe actual facts, unless they have the good fortune to see for themselves what American enterprise and the friendliness of foreign nations have accomplished for the well-named Ivory City. The St. Louis fair has cost more than twice as much as Chicago's Columbian Exposition—in round figures about \$50,000,000. Its area is nearly twice as large, 1,240 acres, and it has under roof 128 acres, being 46 acres more than Chicago covered with buildings. This means a great deal when one pauses to think of the labor and expense of putting up one acre of buildings of the kind that must be built for a show of this description.

It is a gratifying evidence of international good feeling that more than sixty foreign nations are participating in the Fair. Of course, our own States and territories show up to their own advantage, but regardless of nationality or anything else except the broad principle of the best in civilization, it is worth the time of anybody to inspect the wonders of modern industry which are displayed. Elsewhere some account is given of the opening ceremonies, and from time to time our readers will learn more about the features of the Exposition that may be of especial interest to them.

COMMERCE between Cuba and the United States has already shown a material and gratifying increase, which seems to fully justify the wisdom of the adoption of the reciprocity treaty which went into effect between the two republics just prior to the 1st of January. While Cuba has benefited more in a way than has the United States, it is noteworthy that the total trade has already increased more than 70 per cent. Of this American exporters have to their credit only 25 per cent., the remainder of the gain being to the advantage of Cuba, but it must be remembered that the bulk of Cuba's exports to this country are in sugar, which does not interfere with home industry to any material extent. In agricultural implements, for instance, in the nine months which we have under observation at this time, the exports to Cuba were \$66,659, as against only \$29,164 in the corresponding period a year ago. Other articles of equal usefulness showed corresponding increases.

CANADIANS are showing more appreciation of the worth of American goods than ever before. Nobody knows better than Canadians what is worth buying, whether it be machinery, dry goods or anything else that is traded in on the markets of the world. The *New York Dry Goods Economist* recently published several pages of interesting matter on the subject, from which extracts are given elsewhere in this issue of THE AMERICAN EXPORTER. Our readers in other countries can safely place dependence on the good judgment of our nearest neighbors.

ELECTRICITY is invading more industrial fields. A new factory in the State of Maryland (U. S. A.), which has a capacity of 500 doors a day, depends entirely upon electric motors for operating its labor-saving and other machinery, using the motors individually and in groups. It is hardly necessary to say that the results are very satisfactory.

YOUTH, AGE AND BUSINESS.

SOME people, both at home and abroad, have adopted the idea frequently thrown out that this country's business world is essentially an aggregation of young men in point of age. These people do not seem to differentiate between persons who are prematurely old and others who grow younger as they become older. Almost everywhere in America—perhaps it is so in other countries—we can find men who are unable to obtain employment in positions for which they think they are fitted, who may have been left out apparently of the calculations of the reorganizers of firms or concerns for which they have worked, or who have come to the conclusion that the world is against them anyway; and why?—"because they are too old." Scores of cases of this sort have come under our observation. In the majority of cases the failure to obtain and hold employment has been due to several causes. Usually lack of interest in the work, unwillingness to conform to new customs, an inability to get out of the rut in which they have traveled, can be given as reasons why some men find it difficult to earn a living in the United States. These men are comparatively few, but their existence is a foil for the great army of others who do the best they can in humble positions, hoping to advance, and usually doing so unless they get into a rut. The men who get into a rut and are over 40 years of age invariably give "old age" as a reason for not retaining or being able to obtain employment. That reason is nonsensical. Lack of intelligent progressiveness is the real one.

It is true that young men are in control of affairs in the United States, both in its business life and its government. Some of these "young men" are 60 or 70 years old, according to their birth certificates, and there are other "young men" who are in the 80s and 90s who take part in the progressive control of great business concerns—men who may in the latter case not be physically as alert as they were years ago, but who are still enthusiastic in seeing and taking advantage of opportunities. Mentally they are as young as they ever were, and perhaps physically they are not much worse off than the man who can neither make, nor see, nor appreciate anything new. The question of age is really what each individual makes it. A man, barring accident or illness, is precisely as old as he feels. Take J. Pierpont Morgan, for example. Everybody has heard of him as one of America's prominent financiers. He had his 67th birthday last month, but he probably does not feel more aged than any man of 35 or 40. We have many men in important positions who are over 60. On the other hand, there are young men, in years as well as in enthusiasm, who hold prominent places, but as a rule they are subject to the counsel and advice of older men. It frequently happens that men of 35 or 40 will acquire such a grasp of affairs that they will be permitted to practically and apparently do as they please with great properties owned perhaps by older men—but young men who advance that far rarely permit themselves to forget their full duty and responsibility. They do as they believe the men whom they represent would do on every occasion. These "young men" make successes. While they are entitled to all the credit they receive, it would be unfair to deprive some of the older "young men" from their share..

In America the age and youth question is rarely raised, except by disappointed and unprogressive persons. They are few in number, but are self-assertive, as is the usual custom of persons with grievances. The fact of the matter is this: Every man is as old as he feels. The tendency of American progress is to make men younger if they fall in line with the spirit of the age. Most of them do, and the constant birth of new ideas, the flood of new inventions and the continual improvement of our manufactured articles all give good evidence that the drone cannot prevent "the survival of the fittest," nor can he block the wheels of American trade either at home or with our foreign customers. The drone is not worth attention really, but, like the insects, he comes to annoy all sorts of folks at times—never, however, with any harmful result.

On the whole the drone serves a useful purpose, for by comparison he illumines the successes of those who are not in his category and thereby unwillingly and unwittingly perhaps contributes to the general good of humanity.

OUR PROGRESSIVE MANUFACTURERS.

ONE of the oldest and largest manufacturing concerns in the United States, its origin dates back to 1843, is making a move that is interesting to students of the growth of American trade at home and abroad. The concern produces articles that are in general demand throughout the world and it has acquired a reputation for turning out only first-class machinery for the trade regardless of where the customers may be located. Its central point of manufacture at present is in Brooklyn, a suburban borough of the big city of New York. Within this year all of its manufacturing will be done at its new works, in the neighboring State of New Jersey. The moving of a big manufacturing plant involves the expenditure of much money and causes considerable trouble that cannot be estimated from a financial standpoint. Such a step is only taken by great concerns when it becomes imperative and in this case it has been forced primarily by the excellence of the products put on the markets of the world by skilled and intelligent American workmen; secondarily, by the rapid growth of New York City and the enhanced values placed upon real estate within its confines.

The present plant in Brooklyn covers five acres of land. Attempts that were made to secure more land were met by the higher prices that the increase of values made inevitable. This was only two or three years ago, but the export business of the company showed evidence of becoming too great to handle with the facilities then available. Temporary expedients were resorted to and the managers meanwhile figured on their necessities. They bought thirty-five acres of land in New Jersey and their new shops are now nearly ready for occupancy. These shops cover very nearly all of the ground. The jump from five acres to thirty-five acres of shops is a big one, but taking into account the cramped quarters now used, the necessity for having work done away from the home plant and allowing for the natural growth of business, the increased facilities will be found none too large for the purposes for which they are intended. In the new location enlargements will be possible without prohibitive prices for either land or factory purposes or for homes for the new mechanics who will have to be employed.

The managers of the concern in question faced a difficult problem. Their motto was that of giving the best goods for the least money, allowing for a reasonable profit. The move from New York to New Jersey will cost many thousands of dollars, but the managers figure that the change will enable them to recoup the expense and slightly lower the price which they place upon their products, without decreasing the wages of their workmen or permitting a deterioration of the quality of their goods. Perhaps we have said more than we ought to say about the progressiveness of this particular concern, but it is so much in line with the policy of American manufacturers generally that we believe our foreign readers will be interested in such observations as we have made.

PROBABLY the largest single municipal loan ever negotiated was the sale last month of \$37,000,000 of the 3½ per cent. bonds of the city of New York. New York's debt is enormous, its government is so liberal that it is sometimes called extravagant, but the faith of the men of money in its present stability and its future prospects is so great that more than \$250,000,000 was represented in the bids that were made for the securities. New York City, commercially and otherwise, is doing very well, thank you, when she asks for \$37,000,000 and is offered \$250,000,000. We commend this great loan to the attention of those European critics of our country who are inclined to decry our institutions and methods and who say that we are going to the "demnition bow wows" in our state and municipal affairs.

VARIOUS reports have come by cable from the Far East regarding the destruction of the Czar's \$20,000,000 magic city of Dalny. We are in doubt as to whether the entire city has been destroyed, or whether only the harbor improvements have been razed with dynamite. In any event, the wreckage done is much to be regretted. It is another argument against war.

THE GREAT PORTS OF THE WORLD.

LONDON is to-day the first port in the world in tonnage entered, but according to recent statistics, which have official indorsement, New York is a close second. London is the largest city in the world, and naturally would be expected to show the largest tonnage, which is 10,179,023. New York is now unquestionably the second largest city in the world, and ranks second also in tonnage, but its 9,053,906 tons show that it is much closer to London in point of commerce than it is in population, while Liverpool, which once ranked second in commerce, has dropped back to sixth place, where it is closely pressed by Rotterdam and Marseilles. After New York comes Hamburg, a close third, with 8,689,000 tons, and Antwerp is fourth, with 8,425,127. Hongkong claims fifth place, with 8,253,591, not counting junks, while Liverpool, in the sixth place, has 6,843,200. Commenting upon these figures, the *Tribune*, of this city, says:

"An impressive indication of New York's vast superiority over other American ports is in the fact that, while New York stands an easy second on the world's list, the next American port, Boston, is away down in the twenty-first place, being surpassed by Lisbon, Buenos Ayres, Algiers, Havana and others, while the third American port, Philadelphia, can claim no better than the thirtieth place, below Barcelona, Yokohama and Bordeaux. Our fourth is New Orleans, in the forty-first place, below Gothenburg, but above Montreal; while Batimore, in the forty-fourth place, between Odessa and Valparaiso; the Puget Sound ports, in the fifty-second, and San Francisco, in the fifty-eighth place, complete the list of American ports among the largest sixty in the world.

"It is especially gratifying to make this record concerning New York, because for years past we have been striving for the removal of unwarranted handicaps upon New York's commerce and for the establishment of those reasonable conditions which would promote its growth. It is well to be believed that if proper harbor improvements were effected, if inland routes of access to New York were fully utilized, and if the general port facilities here were made what they should be, the next decade might see New York not the second, but the first port of the world."

There can be no question of the fact that the improvements referred to in the *Tribune* will be carried forward with all possible diligence. The port facilities of New York are being constantly and continually augmented, and if our esteemed contemporary came closer into contact with actual trade conditions, instead of depending upon statistics, the last paragraph of the editorial would have seen some slight changes, for the work of upbuilding the port of New York is going on right along, and quite vigorously, it may be added.

DOMESTIC extension of the parcels-post system has received a serious setback in the United States, so that our friends living in foreign countries which have treaty relations with this Government are better off in this respect than some of our own people. We have always been of the opinion that there was more merit in the parcels-post system for international purposes than for use at home. In the United States there are so many other convenient ways of dispatching small parcels at low rates that it has not seemed to us really necessary to burden the United States mails with matter which would be given to it for transportation under the parcels-post system. For the purposes of international trade the facilities are not so adequate, and our exporters find the system in effect with treaty countries to be both convenient and useful.

WORLD'S fairs seem to be a feature of international life and commerce. This year America has the stage, and the success of the exposition at St. Louis will make it necessary for the next country that indulges in such luxuries to put forth herculean efforts to eclipse the wonders of the Ivory City.

GERMANY'S creation of three new consulates in the American cities of New Orleans, St. Paul and Seattle is taken to mean a fresh recognition of the growing importance of Germany's commercial relations with the United States.

AMERICAN DRILLING MACHINERY.

WHILE Japan and Russia are in the throes of war it is interesting to observe that the pursuits of peace are not altogether neglected in the zone of martial activity. As noted elsewhere in this issue, the water supply of Russia's defenses was constructed by American mechanics with American machinery and much of the machinery used in building her citadels at Port Arthur and Vladivostok was sent from the United States. It is chiefly the water supply which is of momentary interest, for, while Russia stopped operations in this direction when hostilities began, the drilling with American machinery for both water and oil has gone on in Japan regardless of the war.

In Russia, also, outside of the localities affected by the strife, similar activity continues, and in many sections of the Far East our drilling machinery has long been in appreciative demand. This branch of the American manufacturing industry has been carried on quietly, but nevertheless energetically. As a result it may be said that wells are being drilled somewhere on the earth at every moment of time, for users of our machinery are in every quarter of the globe and American drills are everywhere at work penetrating the crust of our planet.

Our competitors abroad have never yet been able to excel American machinery produced for this purpose, and the constantly increasing demand is evidence of the fact that the efforts of our inventors and manufacturers to give the best goods that can be produced for the money are thoroughly appreciated by people everywhere who have occasion to bore for oil or water—as well as those who require other articles in the production of which our artisans have wrought wondrously well.

EDUCATIONAL effort is not lost sight of by American trades unions. Nearly all of the national bodies have their own magazines to spread information and suggest new ideas to their members. We learn that the cost of these organs to some of the larger organizations is as follows, per year: *Garment Workers' Weekly Bulletin*, \$32,000; *International Steam Engineer*, \$40,000; *Shoe Workers' Journal*, \$25,000; *Bricklayer and Mason*, \$25,000; *Locomotive Engineers' Journal*, \$33,000; *Locomotive Fireman's Journal*, \$55,000. In one case the advertising patronage is \$40,000 a year, offsetting the cost, while some of the magazines are profitable business enterprises, although the object is not to make money, but to keep the rank and file of the organizations fully informed upon all matters concerning the unions and of interest or benefit to them in their daily pursuits. In fact, the aim is to do constant educational work, and its result is shown in the good work—better work than ever before—that is being done by American mechanics. Foreign purchasers of our products are the final beneficiaries of this campaign of intelligence.

NEW YORK is to have a new \$2,000,000 post-office, and the building will be placed over the underground railroad terminal of one of the greatest transportation systems in the United States. Nobody can now doubt New York's onward progress, if anybody has been tempted to do so.

AMERICAN financiering is shown at its best in the story on another page about the payment of the \$40,000,000 for the Panama Canal. The United States Government managed the payment so carefully that it did not make even a ripple on the financial pool.

COTTON cultivation in India shows a development that will doubtless attract the attention of American manufacturers who supply implements used in this industrial field. More than a million acres are being cultivated this season in addition to the acreage of a year ago.

EUROPEANS will have a chance to meet John Mitchell, who conducted the great American coal strike more than a year ago. He will go to Paris next August as a delegate to the International Mining Congress.

A REAL WORLD'S FAIR.

America's New Exposition Opens Auspiciously and Is a Success from the Start.

AMERICA'S \$50,000,000 World's Fair has been opened and continued in successful operation during the month of May. The inaugurating ceremonies were held too late for adequate notice in our May issue, but the Exposition is of so much importance to international trade that some features of the opening are herewith given to our readers. A complete account of the opening would crowd out of this issue the many other items of information that our readers expect every month. The ceremonies were appropriate and impressive. The Exposition was planned to commemorate the purchase of the territory of Louisiana, the greatest step, to use the words of Mr. Roosevelt, the President of the United States, in "the movement which transformed the American Republic from a small confederacy of States lying along the Atlantic seaboard to a continental nation." President Roosevelt, in the national capital at Washington, by means of touching a telegraph key, gave the signal which set the machinery in motion and started the big Exposition in St. Louis, hundreds of miles away. It was significant of the control over force and distance that the touch of the President's hand set in motion 40,000 horse-power of machinery, 800 miles away, without hitch or delay. There were many speeches made on the occasion of the opening. The President, at the ceremonies at Washington, which were witnessed by all of the foreign diplomats who did not go to St. Louis, said in part:

"I wish now to greet all present, and especially the representatives of the foreign nations here represented, in the name of the American people, and to thank these representatives for the parts their several countries have taken in being represented in this centennial anniversary of the greatest step in the movement which transformed the American Republic from a small confederacy of States, lying along the Atlantic seaboard, to a continental nation.

"This Exposition is one primarily intended to show the progress in the industry, the science and the art, not only of the American nation, but of all other nations in the great and wonderful century which has just closed. Every department of human activity will be represented here, and, perhaps, I may be allowed, as honorary president of the Athletic Association, which, under European management, started to revive the memory of the Olympic games, to say that I am glad that in addition to paying proper heed to the progress of industry of science, of art, we have also paid proper heed to the development of the athletic pastimes which are useful in themselves, which are useful as showing that it is wise for nations to be able to relax as well as work.

"I greet you all. I appreciate your having come here on this occasion, and in the presence of you, representing the American Government and the governments of the foreign nations, I here open the Louisiana Exposition."

At St. Louis the opening ceremonies were witnessed by an enormous throng, the city and Exposition grounds were bedecked with holiday attire, flags and bunting were everywhere displayed, and foreigners and American citizens vied with one another in contributing by their enthusiasm to the success of the first day of America's greatest world's show. President Francis, of the Fair, in his address, said some things that will interest our readers, if any of them wish to emulate this example. In part he said:

"Six years have passed since this conception began to assume form. The first year was devoted to arousing the interest of this community and securing the cooperation of the States and Territories of the Purchase. The next two years were spent in enlisting the sympathy of other sections of our own country and in gaining the recognition and assistance of the general Government. Three years ago the work of preparation was begun. It has been vigorously prosecuted in every section of the globe. The movement has changed in scope from day to day and taken on more definite shape from year to year.

"Discouragements were frequent enough, but were never disheartening, and are now all forgotten. We remember only the words of cheer and commendation, the patient consideration given to what was often looked upon as misdirected enthusiasm, but which was persisted in, and almost invariably converted indifference or scepticism into helpful and active interest.

"The magnitude of the enterprise was never lost sight of by its promoters, but its mammoth proportions, constantly increasing as they developed, never for a moment shook the confidence, weakened the energies or diverted from their well-defined purposes those who had been entrusted with the responsibility and the work. To-day you see the consummation of their efforts.

"The sincere and helpful interest of the Federal Government, the unanimous cooperation of the States and Territories and possessions of the United States, the participation of almost every country on the earth, is evidence of the wisdom and thoroughness of the work of exploitation and establishes unquestionably the universal character of the Exposition.

"It will have a place in history more conspicuous than its projectors ever conceived. For more than a generation to come it will be a marker in the accomplishments and progress of man. So thoroughly does it represent the world's civilization that if all man's other works were by some unspeakable catastrophe blotted out, the records here established by the assembled nations would afford all necessary standards for the rebuilding of our entire civilization.

"By bringing together sections and peoples hitherto remote and unacquainted, and thereby promoting mutual respect, it is a distinct step toward establishing that universal peace for which all right-minded people are striving,

and which the Exposition's gifted sculptor has so fittingly typified in the graceful figure that crowns the noble monument at whose base we stand."

Other speeches were made in the same strain, and the Exposition was soon in full blast. It has been a success from the start. There was less uncompleted work—there is always some—than has ever before been observed in a world's fair. People who have been present at the opening of world's fairs for a quarter of a century complimented the executive officers of this one upon the nearness to perfection which they had achieved.

As is generally known the cost of construction, etc., is about \$50,000,000. A visitor unacquainted with American methods would be inclined to doubt if the cost could be kept within that figure, large as it is. To give our readers who may not be able to visit the big fair some idea of the attractions it may be said that the main portion of the Exposition grounds is occupied by the ten large exhibit palaces, as follows: Liberal Arts, Mines and Metallurgy, Manufactures, Education, Agriculture and Horticulture. In addition to these, is the group of permanent stone structures erected for the display of art at a cost of \$1,000,000, located at the rear of the Cascade Gardens, behind Festival Hall; the Washington University buildings in the western part of the grounds, which cost \$1,000,000, will be utilized by the Exposition until its close, when they will be turned over to the Washington University.

Skirting the northern boundary of the Exposition for almost a mile is the street of concessions, lined on both sides by buildings containing various attractions, erected at a total cost of \$5,000,000 by concessionaires. This street has been officially termed "The Pike," and corresponds to the Midway of the Columbian Exposition at Chicago.

Our readers will be kept fully informed of the progress of the fair.

Marconi's Latest Wireless Successes.

SIGNOR MARCONI, who arrived in New York last month on the trans-Atlantic liner *Campania*, said that during the trip from Liverpool he had been able to communicate, by means of his improved wireless apparatus, from mid-ocean with both sides of the Atlantic. Last October, during an eastward voyage on the *Lucania*, Mr. Marconi received messages from the land stations during the entire voyage, and now he will, under contract with the Cunard line, install instruments on all of its vessels for both sending and receiving messages all the way across the ocean, so that newspapers containing the latest news of the world can be printed on board every day.

On the *Campania* Mr. Marconi had a stateroom on the port side of the vessel, and in it he installed his key, the wires leading to the truck of the foremast. On leaving Liverpool the vessel was put into communication with the shore stations at Poldhu, Seaforth Sands and Crookhaven. During the voyage the vessel logged 3,158 knots. According to his statement Mr. Marconi continued to send messages to the Poldhu station until he was 1,700 miles at sea. After the vessel has passed the 1,500-mile mark he sent messages to Cape Breton, cutting off Poldhu after 1,700 miles. Everything sent to the land stations was received, and the only mistake made was in the name of Gen. Sir H. C. Wilkinson, a passenger on the *Campania*, whose name at a distance of 1,000 miles was received "Wilson."

Mr. Marconi was very enthusiastic over his success. "My recent voyage," he said, "was taken for the purpose of testing a combination of the best points of four keys, the new instrument having the greatest range of anything of its kind ever made. We kept in communication with Poldhu for 1,700 miles, which, you see, is more than half seas over, and then we started on Cape Breton, and kept talking to that place during the rest of the voyage. So we were in communication all the way over.

"My next experiment will be that of girdling the globe by means of instruments on vessels at sea. The British Government has placed several of its warships at my disposal, and the next three months will be devoted to fitting them with the long-distance keys and receivers. Then they will be stationed at different points around the world, and I shall try to pick each one up in succession. The only instruments that can take our messages are those keyed up just as ours are, and to do that is so nearly impossible that I say it cannot be done."

Powerful Toys of Wealthy Americans.

IT is becoming a fad with some rich men in America, according to *Motor Age*, to establish automobile racing stables much on the lines of horse-racing stables, except that the gambling features of the latter are not possible. Fast automobiles are purchased and turned over to hired drivers to be raced for glory and cups. The owner gets the cups and the maker and driver of the car get the glory. It is hardly possible to see how a man by simply playing the check-book rôle becomes an active part of the automobile racing game. He may do it good by supplying entrants. Soon he will not be needed. What is he in it for? Presumably not as a philanthropist, contestant or for personal credit. It must be for the sake of pride of ownership of a good thing. His racing success is *his* car; he paid for it. Some one else designed it, built it and drove it. He bought it. Like the child with a new toy, hugged tightly, the right of possession is strong in him. It is his little fad to be the possessor of winners. These rich men contribute something to the practical progress of the world, for they keep American inventors and manufacturers busy seeking new ideas and constructing new appliances, many of which aid in the advancement toward perfection of the commercial automobile.

James J. Hill—A Successful American.

OUR foreign readers have only recently heard of James J. Hill, the American financier who has the courage to build giant ships for our export trade without Government subsidy. Mr. Hill is a most interesting man, aside from what he is doing to advance the interests of international trade, and some account of his career is worth giving to our readers, as showing how an ordinary clerk in America—if he becomes inoculated with the forward movement of affairs—can within a comparatively few years order the construction of the largest freight steamships afloat for foreign trade, in addition to making a fortune out of judicious railroad investments. Mr. Hill's success is typical of American progress. An entire issue of THE AMERICAN EXPORTER could be filled with his achievements, and some of them, including the building of the new trans-Pacific steamships Dakota and Minnesota, have already been chronicled in these columns.

At first a shipping clerk for a steam packet line running on the Mississippi River, Mr. Hill then organized a steamboat line of his own, which ran up the Red River of the North and brought back furs which before that time had crawled southward in curious two-wheeled carts. Mr. Hill was the first man to bring coal to the city of St. Paul. It came up the river in steamboats in which Mr. Hill had acquired an interest.

They were talking railroads and building them, too, in those days. A lot of Dutch capitalists dropped \$30,000,000 in a little line called the St. Paul and Pacific Railroad. With the aid of Canadian bankers Mr. Hill bought up the bankrupt road and announced that eventually he should build it through to Puget Sound. Citizens laughed, for just to the south was the Northern Pacific, aided by enormous Government grants, while to the north the Canadian Pacific was being rushed through to the coast with large Government aid.

It took time to force the road westward. Out in Dakota when Mr. Hill took hold in 1879 the settlers were few and far between and badly discouraged. From the first Mr. Hill had blazoned on his banner the motto "Develop the country."

"It was years ago," said Mr. Hill recently, "that I made up my mind that something must be done to keep the people along our lines from being forced to depend upon a single crop. They were all raising wheat. Sometimes wheat failed, and then there was the devil to pay. I bought about 900 polled Angus and shorthorn bulls and as many thousand blooded swine, and distributed them among the farmers all along the Great Northern. That got the people interested in stock-raising. As a result, I believe the Great Northern Railroad (which Mr. Hill controls) handles more cattle and hogs to-day than any road running into St. Paul."

At the start the Hill road found a certain market on the Pacific coast for Eastern products, but there was nothing which the Pacific end produced that could be shipped East at a profit. Consequently the Hill road was forced to pull empty freight cars back from the Pacific to St. Paul. The great products of that section then as now were lumber and shingles. The freight rate then on lumber from Puget Sound to Lake Superior was 60 cents a hundred. At that rate there was no profit in it to the shipper and the lumber did not come East. Mr. Hill wanted that lumber to fill his empty eastbound freight cars. He said to the lumbermen:

"What rate shall I make you in order that you may make the business of shipping lumber East a profitable one?"

The lumbermen asked for a rate of 50 cents. Mr. Hill laughed at them and made it 40 cents. From that time on the shipments of lumber from Washington, on the Pacific coast, to Lake Superior, in the center of the United States, increased enormously.

It became necessary to find a market for products which could fill those empty westbound freight cars. Where was the market to be found? Mr. Hill has the mind of a dreamer, and, as a friend put it, he makes his dreams come true. He simply jumped across the Pacific Ocean and found his market in Japan.

Now the people of the Northwest Pacific section of the United States are talking of little else than the possibility of their Napoleon finally meeting his Waterloo in view of the war. And the little, short, broad-shouldered, deep-chested man, with his immense head, bald on top and in front, and thatched at the sides with a thick crop of long iron-gray hair, sits at his desk in the president's office of the Great Northern system puffing at a black cigar, pulling at his short, roughly trimmed gray beard, and talking now with a wheat farmer from North Dakota, now with a fruit shipper from the Columbia Valley of Washington, and then turning to discuss the situation with some of the great railroad financiers of America who have been made to feel his power.

To talk with James J. Hill is to get an impression of immense vitality, of tremendous and unshaken will, which makes the thought of his possible retirement seem little less than ridiculous. He has in him all of the native-born enthusiasm of the true American citizen. He sees opportunities and does not hesitate to embrace them. No matter what the result may be of the Japanese-Russian war, he has provided ships that will be needed for the trade between the United States and the countries involved.

Using American Machinery.—It is said that the largest shoe factory in France uses only American machinery. The growth of this manufactory is phenomenal. Before the Paris Exposition of 1900 this factory was a very small one, employing only French machinery. Since then it has increased, until it is now the largest in the Republic.—*American Machinist.*

Big Tunnel for Pacific Coast Port.

AMERICA'S metropolis, New York City, is not to have the monopoly of big tunnels. The Pacific Ocean front of the United States is striving to equal, if not eclipse, the efforts of the dwellers on the Atlantic coast, and James J. Hill's tunnel for Great Northern Railroad trains underneath the city of Seattle is expected to show the world the growth and enterprise of the western section of the country. It is more than half completed, and by October it is expected cars will be running through it, greatly relieving the congestion on the water front. A definite date has been set for the completion of the Northern Pacific and Great Northern terminals in Seattle, and the finishing of the big union station. Within two years at most all these big improvements will be completed.

The peculiar topography of Seattle made the tunnel a necessity, for the hills descend abruptly into Puget Sound and leave very little space for railways along the water front. From a broad area of tidelands in the southern part of the city, where the Great Northern terminals will lie, the tunnel penetrates the elevation almost on a level with the water and emerges above the heavy shipping district in easy access to the Hill Oriental docks and wheat warehouses at Smith Cove.

The tunnel passes the greater part of the way 200 feet beneath Fourth avenue, then bends toward the bay and goes directly beneath many large buildings. One five-story building was affected by the tunnel work and condemned. The structure will shortly be torn down. Otherwise the tunnel has produced no ill effects.

When the tunnel is completed it will be the largest in the United States, in point of diameter, and but one in the world, and that in Europe, will exceed it. In connection with the tunnel operations the city is preparing to open streets and make the union station the foot of a broad thoroughfare extending for miles through Seattle to the northern suburbs. The buildings will be among the handsomest passenger railway stations in the United States.

Seattle comes next to San Francisco as our great Pacific coast port, and in the last few years has been making marvelous advances in its export trade position. San Francisco will have to maintain, if not increase, her energetic business efforts if she desires to keep Seattle in second place. Seattle is certainly becoming a great railroad terminal, and its ocean trade facilities are being constantly improved. Costly tunnels, new wharves and a spirit of enthusiasm that is natural to American merchants all tend to point to greater cities for this gateway between the United States and the Far East.

To Print Music with Typewriters.

MUSICAL typewriters, which do not make music directly, but which will contribute indirectly to the production of melody, will soon be on the American market. A company has been formed, with \$200,000 capital, and orders have already been received for 200 of the machines. The typewriter has been put to practical tests, but whether composers of music will take kindly to it or not, it is likely to prove invaluable to persons who have to copy the written scores of composers. This new musical typewriter is said to be a marvel. It registers the notes, bars and rests and, in addition, makes lines as it goes along the staff lines. Under the present system the cost of a single machine is about \$300, but it is thought that this item may be reduced at least \$100 when the factory is in running order. The machine resembles the ordinary typewriter, except that, in addition to performing the duty of registering characters, it forms the scale as the writer proceeds with his work. It is quite probable that the typewriter will simplify the production of music for publication, for the typewritten scores could be reproduced by the usual processes of duplication if not enough copies were required to warrant the expense of printing the same.

Progress of Civilization in Asia.

A WRITER in the *Century Magazine* says that the products of American mills and factories are to be found in all parts of Asia and Africa.

He writes: "The knowledge of modern inventions of new foods and articles has created new wants. The Chinese peasant is no longer content to burn bean oil; he wants kerosene. In scores of humble Laos homes I saw American lamps costing 20 rupees apiece, and a magistrate proudly showed me a collection of nineteen of these shining articles. The narrow streets of Canton are brilliant with German and American chandeliers, and myriads of private houses throughout the empire are lighted by foreign lamps.

"The desire of the Asiatic to possess foreign lamps is equaled only by his passion for foreign clocks. The demand for clocks is insatiable. I counted twenty-seven in the private apartments of the Empress of China, and my wife nineteen in the bedroom of the Empress Dowager, while cheaper ones tick to the delighted wonder of myriads of humbler people."

American Opportunities in Italy.—While the field does not seem inviting for the sale of American railway and telegraph supplies, I venture to suggest that it would be well for our large manufacturers to send expert agents here to practically view the situation. In other lines of goods, such as sewing-machines, cash-registers, typewriting-machines, sausage-grinders, etc., American products have practically the monopoly of the trade. Vigorous efforts, low prices and long-time payments might result in capturing some of the trade in the line of railway and telegraph supplies.—*Pietro Cuneo, United States Consul, Turin, Italy.*

Double Engine Traction

In **THREE** Sizes:

20 H. P.	-	Weight, 9½ Tons
25 H. P.	-	Weight, 10½ Tons
30 H. P.	-	Weight, 11¼ Tons

Boxing for Export will increase weight 20 per cent.

Hauling Capacity, - 15 to 25 Tons,
BESIDES FUEL AND WATER.

These Engines Always Give
Maximum Power.

Where the reduced speed
of a single engine will stall
it, the Double Engine
walks right along.

Wheels (22 to 28 inch face)
shown are for Threshing
and Plowing Traction.

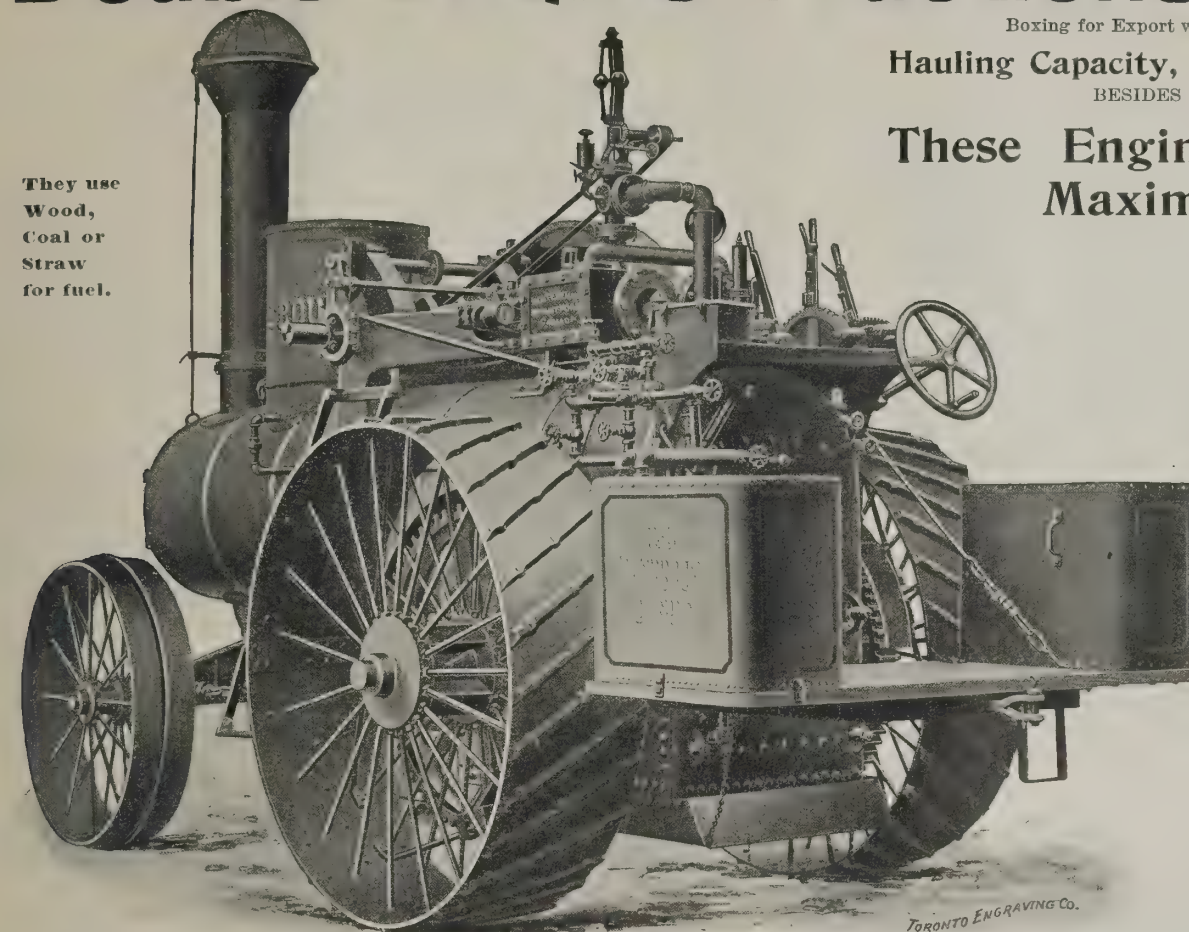
Special Wheels
for Freighting.

Boilers are of ample size.
With indifferent fuel under
severest stress will blow off.

Engines on "belt-brake"
show easily 40 to 60 per
cent. increase in power over
above rating.

Representatives Abroad:

WM. FLEMING,	-	Sydney, N. S. Wales
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TORONTO ENGRAVING CO.

WATEROUS, Brantford, Canada.



"1900" Washer

"1900"
Ball-Bearing
Washing
Machines.



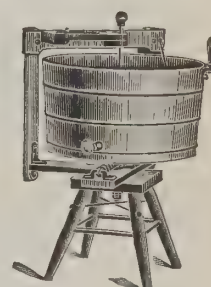
"Domestic" Washer.

"1900"
Ball-Bearing
Washing
Machines.



"Home" Washer.

"1900"
Ball-Bearing
Washing
Machines.



"1900 Junior" Washer.

A REMARKABLE RECORD!!!

Commencing in the year 1900 to manufacture the "1900" Washing Machine, we at that time "turned out" an average of **Five Washers per day**. During the month of August, 1903, we manufactured and sold **OVER FOUR HUNDRED Washers per day**.

A REMARKABLE RECORD!!!

REWARD OF MERIT!!!

REWARD OF MERIT!!!

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-one years' practical experience in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment**, but by the adoption of our **agitator** tosses and tumbles the garment through a **whirlpool of water**, thus **forcing the water through the finest or coarsest fabrics**, causing the clothes to become **ABSOLUTELY CLEAN**, without boiling or scrubbing, without wear or tear, and without the use of chemicals.

SPECIAL OFFER FOR FOREIGN MARKETS ONLY:

\$22.75 Upon receipt of **Twenty-two Dollars and Seventy-five Cents** in U. S. gold, or its equivalent, we will box, ready for steamer, and deliver **F. O. B. cars at New York City, One of Each (Four in All), "1900," "1900 Junior," "Domestic" and "Home" "1900" BALL-BEARING WASHING MACHINES.** Weight of the four machines, boxed, 300 pounds.

To facilitate our increasing export trade we desire to communicate with one responsible business house in each trade center of the world.

Tens of thousands of the "1900" Washing Machines have been sold in the United States, as well as in all parts of the world. Many of our agents at home are making over \$200 per month. Live men in your vicinity can do as well.

Orders received direct or through export houses; when ordering through the latter, to avoid errors, please mail us duplicate of order. Our Illustrated Catalogue mailed postpaid.

The "1900" WASHER COMPANY

BINGHAMTON · NEW YORK · U.S.A.

WIRELESS AUTO THE LATEST.

Automobiles Between Which Telegrams May Be Sent in Army Service Shown at World's Fair.

UNIQUE as an instrument in modern warfare is the wireless telegraph automobile which is exhibited in the Palace of Electricity at the St. Louis World's Fair by an American wireless telegraph company. By using these vehicles army corps, divisions, brigades and regiments may keep in constant communication, no matter how far apart they may be. A general commanding, stationed perhaps fifty miles to the rear, can converse with the officer who is directing movements on the firing line, and the next instant can speak with those who are leading the reserves another fifty miles from the scene of action. He may be so far distant that not the sound of a rifle reaches his ears, yet the click-click of the instrument that is at his elbow in the automobile tells the progress of the battle.

These "wireless automobiles," as they are called until some simpler name can be coined, are remarkable for the tall glass case that rises from the center and in which is confined the operator. This case is about six feet high and two feet square. Through a hood projects a brass rod for another four feet, and the rod terminates in a round knob about three inches in diameter. Glass, being a non-conductor, prevents the currents of electricity which are ever present in the air from affecting the delicate instrument, and only the current to which the apparatus is attuned comes to the knob, then down the rod and creates the sound which takes shape as letters, then as words.

When one thinks of the army of men that in recent wars have been detailed from the active fighting forces to dig holes for telegraph poles, erect the poles and string the wires, not to mention the horses and mules that have been required to haul these accessories into the field, the tremendous step forward in the way of conserving strength of the units is obvious. Again, when wires and poles are used, great financial loss follows defeat, for the enemy captures the equipment that has been placed in position after weeks and perhaps months of labor. But the "wireless automobile" can dash from the scene of action the moment a recall is sounded and take position well in advance of a retreating column.

Two men are sufficient to man one of these novel accessories to an up-to-date army corps—a chauffeur and an operator—although space has been arranged for three persons and the third may be an orderly who will carry aerograms to the commanding officer, or the commanding officer himself.

The speed at which these automobiles travel depends, of course, upon the condition of the roads, but they are so powerful that even on cross-country routes they can make ten miles an hour.

The glass case, within which the operator sits, is collapsible, and when the auto is moving from place to place it can be taken down and stored in a compartment at the side. These novel instruments have not been tried as yet in actual warfare, although it is expected that they will be in the near future, as the Japanese Government has recently purchased several of the machines. They have, however, stood the test in army maneuvers, and by means of two machines, stationed forty-eight miles apart, uninterrupted communication was kept up during an entire day.

The American De Forest wireless telegraph has stood the United States Government test and the system is being introduced in the armies and navies of this country and Great Britain. It is being used to-day on the London *Times* and New York *Times* scout boat Haimun to send dispatches from the scenes of the Japanese-Russo conflict.

Trackless Trolley Cars Coming Into Vogue.

A NOVEL passenger car is to be used on the street railways in the neighborhood of Overbrook, a suburb of Philadelphia, U. S. A. Two of the new vehicles are now being built by Alfred J. Wildman, an automobile manufacturer. The cars resemble so closely the ordinary trolley car in appearance that many people actually believed that they were to be run on the suburban trolley tracks. Lewis Jones, of Philadelphia, who has had a number of automobiles built at Wildman's works, is the man back of the auto-street car service, which, it is understood, will include several points in and around the suburbs of Philadelphia.

The car bodies are each eighteen feet long—just the length of the average single-truck closed trolley car—six feet six inches wide (about the same as the old horse car) and seven feet from the floor to the roof. The windows are of the same type as used in the local street cars, and will be removed in summer, instead of dropped or raised. There will be seven windows on each side, and the ends will each contain three large windows. The entrance will be on the right-hand front end, and the motorman will be located on the left side, so that he will be able to take up the fares of the passengers, either when they enter or leave the car.

The front will be entered through a vestibule, and there will be a center aisle in the car. Upon the right side will be double seats, of the kind used in trolley cars extensively. Double gasoline engines of forty horse-power will drive the car, at varying speeds up to twenty-five or thirty miles per hour. The car will be lighted from the dynamo, which will act as spark for the gasoline engines.

While every effort has been made to keep the cars as light in weight as possible—the body weighing less than a ton, complete—the finish is very thorough. Steam car roofs and straight sides have been introduced, and practically every feature of the average coach has been retained. The braking

will be accomplished through powerful gearing, worked by the foot of the motorman.

This will be the first attempt in this country to operate an automobile street car service with cars approaching so near the street car type, and it will doubtless arouse a great deal of interest. It is possible that the automobile line will be able to outrun the trolley lines, because of the ability to dodge vehicles in front of its cars and the general apathy to high-speed automobiles in suburban districts. The electric railway companies do not look with kindly eyes upon the advent of automobile car lines, because of the conditions under which the latter operate.

No expensive power-house, with miles of copper feed wires, are necessary, and there are few restrictions of any note. It is not necessary to keep any roads paved or bridges in repair, and, finally, if the route doesn't pay, it can be abandoned, with no loss of valuable material.

One of the leading electric railway publications of the country recently sounded a warning in regard to the possible growth of automobile car lines, and said that the electric railway companies should insist upon equal rights with the automobile companies or else compel the autos to come under the same restrictions as the trolley companies.

There promises to be an interesting fight ahead, and the electric railway companies of the United States, with a rapidly growing system which bids fair to some day extend from ocean to ocean, are not likely to sit idly by and see all the good things snapped up by the automobile companies.

American Shipbuilder on Gas Engine's Future.

WRITING under the title of "The Superseding of Steam Power," in the June *World's Work*, Lewis Nixon, an American mechanical and shipbuilding expert, says: "I have been led, lately, to think the whole development of the steam engine, to the exclusion of the gas engine, has been a mistake, and that we are now at the beginning of a new era in the use of power. Engineers could to-day gain better and more economical results by abandoning steam and using internal combustion engines, even in large establishments. The gain in economy of fuel will advance with the size of the establishment. With the internal-combustion engine, a brake horse-power can be produced on a pound of coal. This could not be done with steam under any conditions.

"So great a revolution has come about in methods of producing power that a 10,000-ton cruiser of twenty-one knots an hour could to-day proceed around the world at fourteen knots without taking on fuel and without sacrificing any of her war efficiency. New kinds of engines have come into vogue, which suggests facts larger even than this.

"Oil engines using crude petroleum will be developed as soon as the demand is felt for them, but, even here, the fuel can be made into gas and burned thus with far greater economy than is possible when the oil itself is burned under boilers, or gasoline can be used. In an ordinary 3,200-horse-power torpedo boat, forty-three tons of coal would be used in ten hours.

"With gasoline, the radius of activity of the same torpedo boat can be more than quadrupled, for 3,200 horse-power can be produced from 3,200 gallons of fuel. Briefly, 16,000 pounds of gasoline will do the work of 96,000 pounds of coal. The cost of the fuel is higher, but with a gasoline plant in a torpedo boat, only two men are required in the engine room, and none at all in the fire-room. The dangers of steam at high pressure are avoided, and the complexity of steam machinery done away with.

"Owing to the certain saving to be secured in coal consumption and to the simplicity and reliability of the gas-engine plant, we shall witness a gradual forcing out of the steam plants in future power plants for lighting, pumping, or factory use, and it will be a question of but a short time before many of the existing steam plants will be replaced.

Lieutenant Nixon omits to mention American hot-air engines, but many of our readers who are using them will do a little thinking-as to the equal possibility of expansion in that line, for the hot-air engines are invariably as good as gas engines and better, perhaps, for some purposes.

Making Mechanics by American Apprentices System.

SINCE January 1, 1901, at which time the present system of apprenticeship of the Baldwin Locomotive Works Company was inaugurated under the supervision of N. W. Sample, there have been indentured 545 apprentices. The total number of apprentices carried on the shop rolls at the close of the year 1903 was 379, of which number 345 are machinists, 5 blacksmiths, 5 brass finishers, 10 molders, 12 pattern-makers, 1 boiler-maker and sheet-iron worker. In addition to indentured apprentices there are 23 special apprentices, largely from foreign countries, 1 being a native of Finland, 1 of Costa Rica, 2 of San Domingo, 5 of Cuba, 1 of Spain, 4 of Japan, 3 of Porto Rico and 1 of Mexico.

These figures show that the Baldwin Locomotive Works are doing their share to prevent "race suicide" of the trades worked upon in their establishment. It will be seen that the plan is not altogether a philanthropic one, for the incorporation of the several features mentioned before make the system self-supporting. The chief advantage, however, is the development of a loyal, brainy set of men with a thorough training in the mechanic arts and especially developed in certain lines. The manufacturing plant that has a loyal, intelligent body of workmen who make their employers' interest their own has the very best equipment for meeting the strenuous competition of the present day.—*The Engineering Magazine for June.*



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CUT,
PLANT,
SPRAY,
DIG and
SORT.**

Aspinwall Potato Machines

Make Large Profits Easy by Economizing in Time, Labor and Money.

We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

With Our Machines seed is quickly cut to best advantage. Planting, fertilizing and covering are accomplished at any depth and width of row desired. Spraying is effectively done for bugs and blight. Digging and sorting are made pleasant and agreeable work by our time and labor saving machines.

Our catalogue, illustrating and describing the various styles of

ASPINWALL POTATO

Planters, Cutters, Sprayers, Diggers and Sorters made by us, mailed postpaid.

Aspinwall Mfg. Co., Jackson, Mich., U. S. A.



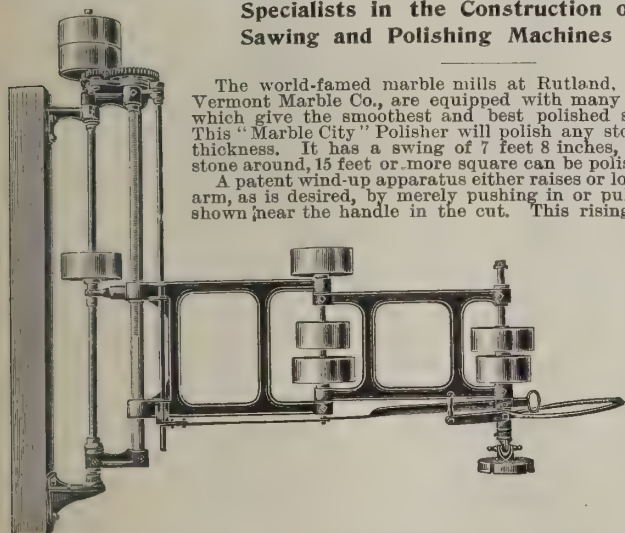
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RUTLAND, VERMONT, U. S. A.

BUILDERS OF

Stone-Working Machinery.

Specialists in the Construction of Planing, Sawing and Polishing Machines for Stone.



The world-famed marble mills at Rutland, Vt., owned by the Vermont Marble Co., are equipped with many of these machines which give the smoothest and best polished surface obtainable. This "Marble City" Polisher will polish any stone up to 3 feet in thickness. It has a swing of 7 feet 8 inches, so that by turning stone around, 15 feet or more square can be polished.

A patent wind-up apparatus either raises or lowers the polishing arm, as is desired, by merely pushing in or pulling out the lever shown near the handle in the cut. This rising and lowering ap-

paratus consists of small gears on a level shown at the top of the machine, which itself rises and falls on the screw shafting, easily seen in the cut.

The total height of the polisher is 9 feet 6 inches and weighs, when boxed ready for shipment, 1,600 lbs.

We carry a large number of these in stock, so that prompt delivery can be made.

MERIT WINS!



Fourteen years ago the **CROSS OIL FILTER** was placed on the market. To-day it is the adopted oil filter of nine governments. It is used the globe over, and is the world's standard method of filtering and purifying lubricating oils. The Cross Oil Filter will **SAVE ONE-HALF THE COST OF OIL**. To

prove all we claim for the filter, we send it on thirty days' approval.

"The Cross Oil Filter will soon pay for itself and be a money-saver right along."

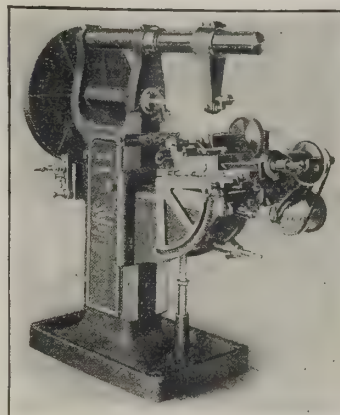
Harrisburg Foundry and Machine Works, Harrisburg, Pa.

The Burt Mfg. Co., 217 Main Street,
Akron, Ohio, U. S. A.
Largest Manufacturers of OIL FILTERS in the World.
Supplied also by Oil Companies, Engine Builders and Power Contractors.

BECKER-BRAINARD

Automatic Gear-Cutting Machines

CUT SPUR, BEVEL AND WORM GEARS.



Each size will cut a range of gears requiring two ordinary machines.

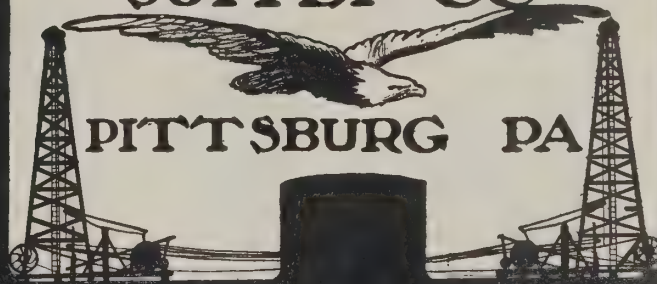
All working parts being simple and in plain sight, are easily adjusted.

If you wish to cut accurate gears at the least cost, write for further information.

BECKER-BRAINARD MILLING MACHINE CO., Hyde Park, Mass., U. S. A.

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NATIONAL SUPPLY CO



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MANUFACTURERS OF

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**Derricks and Rig Irons,
Boilers and Engines,
Drive Pipe Casing and Tubing,
Drilling and Fishing Tools,
Manila and Wire Rope,
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We furnish Complete Outfits ready for drilling.

We give careful attention to export orders.

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FOREIGN DEPARTMENT OFFICES:

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Codes: Western Union, Postal and A B C.

Popularity of American Talking Machines.

TALKING machines have found a big market among sailors and boatmen who by some American dealers are classed as their best customers. The manager of one of these establishments recently said:

"I don't know why it is, but our best customers are those who earn their living upon the waters. I have only recently filled an order for several talking machines for the United States Steamer Dolphin, prior to which time I supplied the Washington Navy Yard and five or six vessels of the United States Navy. In some cases the sailors have clubbed together and bought them, while in other cases the officers have invested in them.

"To-day the crew of every sailing vessel, from a big four-master to a Chesapeake Bay tug, is almost certain to have a talking machine, and I venture to say that six or seven out of every ten boats of the Chesapeake oyster fleet, on the Atlantic coast, are as well provided for. The vessels that come to Washington loaded with ice from the Kennebec River, away up near Canada, are also supplied.

"The best part of it all is that such instruments are a decided moral benefit to those on shipboard. The lives of sailors are lives of dreary solitude and hard work, and this is the reason why, as soon as they reach land, they make for some low dance hall, where there is a barrel organ, a cracked piano or an accordion grinding out music of a character more villainous even than the surroundings in which it is played.

"With a talking machine on board all this is changed. The ship may be in mid-Atlantic or in the solitudes of the South Pacific, thousands of miles distant from the home port, yet it makes no difference; as soon as the sailor's watch is finished and he has in a measure solaced himself with a hearty meal and a pipeful of plug or Trichinopoly, a few turns of the crank will transport him back to civilization."

It would seem as though the talking machine had thus in a measure solved the problem of entertainment in lonely places, for it is becoming as much in demand in the country as it is on the seas. Every well-to-do farmer, stockman or miner is certain sooner or later to obtain one. One encounters them through the Australian brush, among the adobe houses of Texas ranchmen and in the cabins of the Idaho and Montana sheep farmers and miners.

The talking machine is immensely popular among the non-English-speaking peoples of the earth. The Shah of Persia is delighted with it, and the Siamese Minister at Washington has several, in which he takes the greatest pleasure.

The Growing Use of Water and Electric Power.

WHILE it is admitted that steam is largely employed in America for the purpose of securing direct motive power, yet it is an undeniable fact that electricity is rapidly making inroads on the utility of this factor, and especially is this true with rented power, recent statistics showing that electric power is rented far in excess of any other kind. Possibly no other field has so aided the development of electric power as has the electric railroad, of which there are more than 1,200 in the United States alone, using a total capacity of more than 1,000,000 horse-power. There are said to be over 3,300 central stations for the distribution of electric current for lighting and power purposes, one company alone in New York City operating several stations, aggregating 250,000 horse-power, and the isolated plants in this city are reported to supply 100,000 horse-power.

Electric motors have been known for the last quarter of a century or more and at least twenty years ago were applied experimentally to the propulsion of boats and cars and to the operation of machinery, but as they depended for their supply of current upon primary batteries consuming zinc and costly chemicals, they could not make for themselves a place in the industrial world. The perfection of the dynamo and the discovery of the fact that the dynamo is reversible—that is, that if current were supplied to it, it would run as a motor, released electric power from the conditions that had previously hindered its development, and the art made an immense stride forward, particularly in this country. This development of the electric motor has been accompanied by a corresponding transmission, and especially is this true of the development that has been made since 1890, when there have been such remarkable changes in the methods of current generation as to enable the creation of new centers of manufacture around water powers and the transmission of power by electricity over distances that were previously thought prohibitive.

The development of electric power transmission at Niagara Falls, on the border line between the United States and Canada, has been the largest and most conspicuous of its kind, and from that point power is transmitted by the Niagara Falls Company to the city of Buffalo, twenty miles away, and other places, the ultimate capacity of the power houses being 50,000 horse-power each. In addition to the marvelous horse-power utilized and supplied by this company a large amount of the Niagara current is employed in electrochemical and electro-metallurgical operations, and in the extensive grain operations carried on at Buffalo, and at the Buffalo Dry Dock Company, where forty motors of upward of 500 horse-power capacity are employed in the process of building some of the largest steel steamships that ply the great inland lakes of the North American continent.

But it is to the far western portion of the United States that we must turn our attention to find the longest power transmission in the world up to the present time, that of San Francisco and several other Pacific coast cities, from the Sierras in eastern California, and over a distance nearly ten times that at

Niagara. Another wonderful feature of this work is that whereas the Niagara is a power secured from a fall of from 150 to 200 feet of a huge volume of water, the large enterprises in the State of California depend upon the utilization of relatively small bodies of water, but with falls varying from 500 to 1,500 and 1,800 feet. This application of power has relieved the strained conditions in many of the mines, owing to a scarcity of fuel, and a large amount of miscellaneous work throughout that State is now tributary to these long-distance transmissions, which excel in daring, in number and in commercial success anything attained in any other part of the world.

The transmission of the power of the North Yuba River, in the Sierras to San Francisco, above referred to, stretches across sixteen counties. The systems have two sources, one at Colgate, over 200 miles from the Golden Gate, and the other at Electra, 150 miles distant, meeting at San Francisco Bay, at Mission San José and at Oakland. The Colgate plant is located at the base of a 1,500-foot hill. Water is brought a distance of seven miles through a timber flume capable of delivering 23,000 cubic feet of water per minute. Current is generated at 2,400 volts pressure and is raised by transformers to a pressure of 40,000 and 60,000 volts, and as high as 80,000 volts have been reached. This current is carried across the Straits of Karquines in a span of 4,448 feet, supported 200 feet above the waters by steel latticed towers, the circuits being composed of stranded plow steel in order to obtain the requisite tensile strength. This power is employed in the operation of street cars, the running of flour mills, in the mines and various other industries.

"Water Curtain" a Perfect Theater Protection.

SOLID sheets of water rising from the footlights in theaters and stretching across the proscenium arch, forming a wall of water completely separating the stage from the auditorium—this may be the fire curtain of the future, according to *Popular Mechanics*. The "water curtain," which will doubtless be installed in all first-class playhouses of the future, is the invention of John W. Regan, late chief of the Boston (U. S. A.) fire department.

A pipe leads from a main in the street underneath the stage to the center of the proscenium arch. The nozzle is screwed on to it flush with the top of the stage floor. If there is not pressure enough from the street, which should be at least sixty pounds, it must be supplied from a tank from above.

This will give three sheets of water 150 feet wide and 60 feet high. Of course, there is the double action of the water going up and coming down. One of these curtains will protect the Boston Theater stage, which is the largest in the world. The water curtain will also lift the smoke so that the auditorium will be clear and the audience can walk right out.

The curtain of water is produced by a peculiarly shaped nozzle attached to a piece of pipe with an elbow extending upward. Across the nozzle are three slots, each about a quarter of an inch wide and extending from side to side. The top of the nozzle is not unlike a two-wick burner of a kerosene lamp. The nozzle, however, has three slots, and from them water radiates in three separate sheets, making a water curtain three layers thick, forming a barrier absolutely impervious to flame.

The water curtain was recently tested in the streets of Boston. The water flared out like a great fan, 50 feet high and 100 feet wide. Not only for theater curtains, but for the interior and exterior of buildings is the invention designed.

Interested in American Bridges.—United States Consul Norton, at Harput, Turkey in Asia, sends to the American Department of Commerce information to the effect that two projected bridges over the river Euphrates, a short distance from Harput, offer distinct opportunities for American bridgebuilders. He says: "The governor-general of this vilayet takes a keen interest in these projects and has asked me to secure plans and ultimately tenders from American firms."

For the Canadian Trade.—The Allis-Chalmers Company will hereafter conduct its Canadian business through a new organization called Allis-Chalmers-Bullock, Ltd., with Montreal as its headquarters. The organization includes the Bullock Electric Manufacturing Company, which was recently acquired by the Allis-Chalmers Company.

Automobiles and Agriculture.—The first farmers' organ to awaken to the utility of the automobile in agriculture is the *American Agriculturnist*, and an editorial in the last issue presented the case very intelligently. It advised farmers not to turn up their noses at the automobile because its possibilities exceed all dreams.

Dairy Machinery.—Our readers who are interested in this branch of industry will do well to send to the Vermont Farm Machine Company, Bellows Falls, Vt., U. S. A., for some interesting and instructive literature which the company has prepared concerning the operation of its specialties in dairy machines.

Time Vs. Cost.—Nails are so cheap in America and the workman's time is so valuable that it is unprofitable to straighten a bent nail or to stop work to pick up one when dropped.

THOMAS K. OBER & CO. (INC.)

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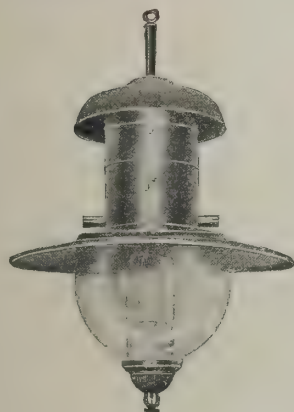
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One Gallon of Kerosene Oil Gives a 1,000-Candle-Power Light for Twenty-five hours.

Perfectly Safe. Does Not Increase the Insurance.



No. 505.
Outside Arc Lamp; outfit with tank; 1,000 candle-power; 35 inches.



No. 405.
Outside Lamp; outfit with tank; 2,500 candle-power; 38 inches.



No. 506.
Outside Arc Lamp, with fount attached; 1,000 candle-power; 44 inches.



No. 501.
Bracket Lamp; outfit with tank; 1,000 candle-power; 15 inches.



No. 505.
Inside Arc Lamp; outfit with tank; 1,000 candle-power; 35 inches.



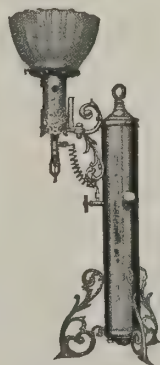
No. 116.
Portable Lamp for household use; 1,000 candle-power; 22 inches.



No. 504.
Harp Fixture Lamp, with fount attached; 1,000 candle-power; 40 inches.



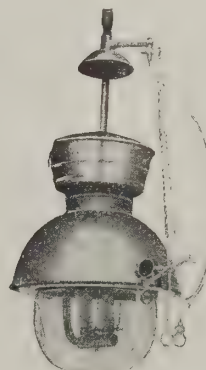
No. 165.
Post Lamp; 2,000 candle-power; 12 feet. Tank in base of post.



No. 500.
Portable Table Lamp; 1,000 candle-power; 31 inches.



No. 405.
Inside Lamp; outfit with tank; 2,500 candle-power; 38 inches.



No. 190x.
Outside Lamp; outfit with tank; 2,000 candle-power; 30 inches.



No. 170.
Contractors' Portable Post Lamp; 2,000 candle-power; 7 feet.

The above cuts represent only a part of our large variety of lamps. We can supply you with anything you want for lighting purposes. Give us particulars of the place and space to be lighted, and we will advise what you need.

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Canada, the United States and the Empire.

GEORGE E. FOSTER, former Canadian Minister of Finance, contributes to a recent number of the New York *Dry Goods Economist* an instructive article on "The Canada of To-day," showing that the Dominion is not only taking enterprising advantage of the country's own possibilities, but that its future as a neighbor of the United States is practically assured. Herbert B. Ames, of Montreal, who is a prominent figure in the public business life of the Dominion, shares with others in an optimistic view of conditions.

"Canada, in my opinion," he said to an *Economist* representative, "is entering upon an era of great prosperity. A comparison of the trade figures of 1901-3 with those for 1895-7 shows that the imports for the three years 1901-3 are 86 per cent. greater than those for the three years 1895-7, before the preference to England was given. Canadian trade has expanded more than 100 per cent. during the last ten years, and the outlook in all directions is hopeful. The tariff question, however, demands attention. My opinion is that the Canadian customs tariff should be subjected to a thorough and immediate revision in the interests of the trade and commerce of the Dominion and the Empire."

Mr. Ames has just returned from England, where, with George E. Drummond, president of the Canadian Manufacturers' Association, and Mr. Hodgson, he was the guest of the London Chamber of Commerce. In an address before that body, Mr. Ames made some interesting references to the trade of Canada. He pointed out that before the preference was granted to British imports British trade with Canada was declining and was threatened, in fact, with almost complete annihilation. In 1872, 58 per cent. of Canadian imports came from Great Britain; in 1882 the amount had declined to 45 per cent.; in 1892, to 35 per cent., and in 1902 it barely reached 25 per cent. Since the preference, British trade with Canada had largely increased in value, but it had not more than held its own in proportion to growth of the total imports.

The chief commercial rivals of Great Britain in Canada, Mr. Ames further pointed out, were the United States and Germany. The latter has been placed practically *hors de combat* by the surtax which German goods now have to pay. The effect will probably be, he said, to reduce German imports by one-half or one-third of their former amount.

The Americans are enterprising business men, Mr. Ames told the Britishers, and he proceeded to tell them what were the advantages offered by their most formidable competitors in Canada. In the first place, he showed that the manufacturers in the United States usually made their goods in advance of selling them, and so were prepared to execute orders at the shortest possible notice. That was too seldom the case in Great Britain, and considerable delay often occurred in the despatch of goods from that country owing to their having to be manufactured after receipt of the order. The Americans, too, quoted their goods delivered in Montreal, and in the currency of the country; consequently a Canadian importer could tell just what they would cost laid down in his warehouse. On the other hand, when buying in Great Britain, he had to do so at their cost in the warehouse there and add on to that an infinite number of small charges.

The American methods of securing business, too, showed far greater activity than those of the British, declared Mr. Ames. The Americans took a greater share of the expense than did English manufacturers in pushing the sale of their articles, and they also recognized that Canadians had trading idiosyncrasies, and tried to meet them. The British manufacturers, Mr. Ames pointed out, would have to study the requirements of the Canadian market and learn to produce goods which the people in Canada wanted, rather than what was deemed best in Great Britain.

The *Economist* interviewed other eminent Canadians and the trend of their opinion was more than favorable to the future of the industries of the North American continent.

American Trade with the Dominion.

IMPORTS from the United States into the Dominion of Canada, says United States Consul Wakefield, of Orillia, Ontario, in a recent report, show a substantial increase each year, and this in the face of the fact that a new subport of entry was established last year at North Bay, at which entries are now made for a section formerly comprising part of the territory connected with the port of Orillia. Imports for the year ending June 30, 1903, amounted to \$1,770,000. By far the greater part of these imports are free goods. The duties collected amounted to \$42,000, as against \$39,000 the previous year. He says:

"Two lines of men's boots and one of ladies' made by American firms are handled here, and the trade is increasing steadily.

"American harvesting machinery and agricultural implements give splendid satisfaction. Three or four of the largest American agricultural-implement manufacturers have established branch plants in Canada.

"Collars, cuffs and shirts from New York, imported last year for the first time, have given excellent satisfaction.

"In the machinery line very little is imported except from the United States. From 30 to 50 per cent. of the tools and machinery used in this district is imported from the United States. Nearly all of the most expensive machinery used in the tanneries, pulp mills and wood-specialty and veneer works are of American manufacture.

"With the same conditions that now prevail, and careful consideration of the local requirements, there is little danger of any falling off in the imports

from the United States, excepting only in those articles which are being manufactured in Canada by branches of American firms. The present outlook is as favorable as that of the past two or three years, and the past rates of imports should readily be maintained."

Among the American products enumerated by Consul Wakefield as being imported into the Orillia district are cash registers, cash carriers, cottons, canes, umbrellas, brushes of all kinds, collar buttons, fancy goods, etc.

Facts About a New American Wonder-Worker.

IN the June *World's Work* Arthur Goodrich tells some interesting stories about Charles P. Steinmetz, one of the greatest electrical inventors, some of whose achievements have heretofore been mentioned in THE AMERICAN EXPORTER. He is considered by many to be the Edison of the future. Steinmetz has a mathematical brain. One of his ablest assistants spent a number of days of hard work in solving an intricate mathematical problem. When he had finished it, he asked Steinmetz to work it out. The inventor grasped the problem at once, counted on his fingers a few times, and gave the correct answer without touching pencil or paper. Yet he remarked recently: "Mathematics are valuable only to obtain results. Mathematics for mathematics' sake are foolishness."

Some years ago Steinmetz went into the Adirondack mountains with a hunting party of friends. Not caring to hunt, he was often left alone at a little lodge that was made the party's headquarters. One night before the camp-fire a mathematical question came into his head. To settle it, he needed a table of logarithms which could not have been found within miles of the camp. He remembered a few figures, and in a short time had worked out an entire table of logarithms for himself, and from it solved the problem. This mathematical sense, which was originally trained by hard study at college, makes it possible for him to answer quickly the rapid fire of questions his aids hurl at him daily.

The laboratory workers come to him constantly for advice and direction. Eighteen thousand employees stand ready to work out his ideas. With the men, he is always genial and democratic. When any business matter needs settling, he does it in determined fashion. He is as independent as he is good-natured. When the heads of the works made a rule against smoking in the factory, Mr. Steinmetz said he would smoke or leave. He did not leave. "He can accomplish more in an hour," said one of his assistants, "than I can do in a week." If some difficult problem needs solution at the works, it is nearly always taken to Steinmetz.

Not long ago there was an explosion in a manhole in New York City, which made great trouble for an electric railroad. Many local engineers tried to find the cause of the trouble, and gave various unsatisfactory explanations. The matter was brought to Mr. Steinmetz's attention. In a few moments he asked how certain adjacent wires in the manhole were covered. Here, indeed, was the trouble. It was simple, but no one else had thought of it. He takes the short cut to the essential thing. It is characteristic of all his work.

Buys a Railroad to Demonstrate a Principle.

WESTINGHOUSE, the American inventor, through one of his companies, has bought control of a railroad for the purpose of demonstrating the feasibility of conducting broader passenger and freight traffic by electricity. The railroad acquired is the Lackawanna and Wyoming Valley Rapid Transit. It was built for a third-rail electric line between Scranton and Wilkes-Barre, Pa., and between Scranton and Carbondale, Pa. George Westinghouse was identified with the syndicate which advanced the money for the construction of the Scranton-Wilkes-Barre line, which has just been completed. The Westinghouse company has advanced \$4,000,000 for control of the traction company. Of this amount \$2,000,000 was taken from the company's treasury, and \$2,000,000 was borrowed at 6 per cent. on notes purchased by a New York firm.

It is stated on semi-official authority that if the Westinghouse demonstration is a success, the road will be turned over to the Pennsylvania Railroad, one of the largest trunk lines in the United States. It is this sort of faith in new ideas that causes American industries to make rapid progress.

Agricultural Exposition in Russia.—According to *Les Annales Diplomatiques et Consulaires*, Paris, an agricultural exposition is to be held in Kief, Russia, during August and September, 1904. It is to have an industrial department or division for the exhibition of machines for refineries, distilleries, breweries, soap factories, brick kilns, starch factories, factories for making farinaceous foods, and another division for industries that aid agriculture; rope walks, tanneries, factories for extracting vegetable and mineral oils, glue and paste mills, etc. Agricultural machines, seeds, and everything pertaining to agriculture will be admitted free. The exposition is under the direction of the Agricultural Society of Kief.

Chili Wants American Railroads.—The Chilean Government expects to spend \$100,000,000 within the next fifteen years on railroad and other improvements, including sewerage and paving, harbor improvements, etc. A special commissioner of the Government is now in the United States preparatory to asking for bids for the initial work on the Trans-Andine Railroad, a matter of \$250,000. It has practically been decided that the equipment used will be made in the United States.



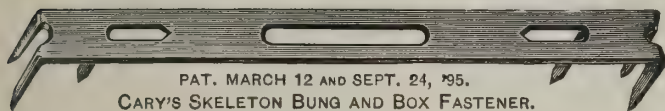
CARY'S UNIVERSAL BOX STRAPPING

Made of soft steel through which nails can be easily driven.

Put up in coils of 300 feet and packed 20 coils in a case.

Patented
in All
Countries.

Made in four widths, viz.:
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PAT. MARCH 12 AND SEPT. 24, 1895.
CARY'S SKELETON BUNG AND BOX FASTENER.

SKELETON AND TWISTED PRONG FASTENERS.

MADE IN VARIOUS SIZES.



CARY'S TWISTED PRONG
FASTENER
PATENTED SEPT. 24, 1895.



PROTECTIVE SEAL
For Wine Cases.

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CABLE ADDRESS: "CARLEIO."

The Universal (Tipless) Lamp



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ALL VOLTAGES, CANDLE-POWERS AND BASES

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YÖST TYPEWRITER.

Full Keyboard of 85
Characters,
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INK PAD

allows types to print direct
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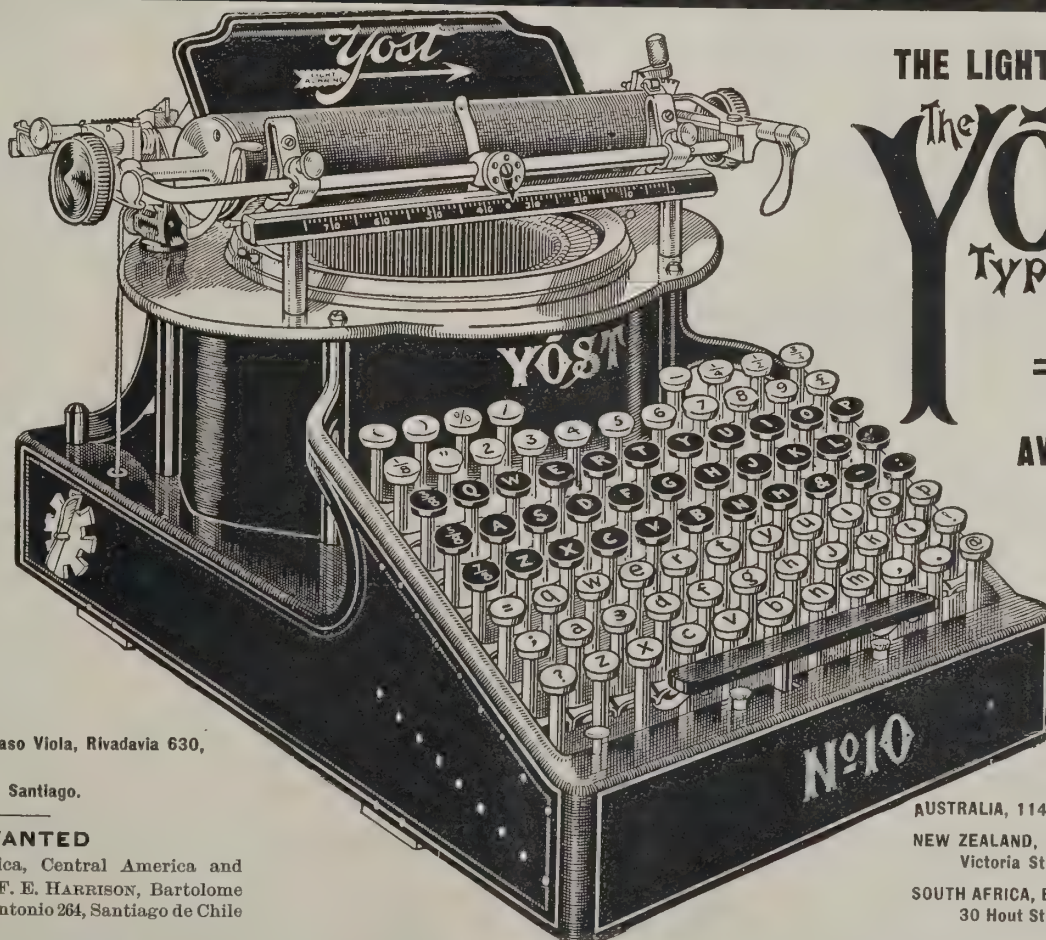
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In other States of South America, Central America and
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The
YÖST
Typewriter

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22

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MEDALS.

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Santa Monica 2; and in all other large towns.

TELEGRAPHIC PROGRESS.

Sixtieth Anniversary of Invention Sees New System Simplifying Present Methods.

MAY 24th was the sixtieth anniversary of the initial operation of the American telegraph. To be exact, it was on May 24, 1844, that the first message was sent over the line constructed under Morse's direction between New York and Baltimore. The development from the comparatively simple and primitive methods of that time to the complex and perfected operations of the present time is a chapter in progress and invention, beside which the highly colored fairy romances of the nursery are tame, indeed, says the *New York Times*. Samuel F. B. Morse, brilliant as was his mind, daring as were his conjectures, could scarcely have conceived in even his most sanguine moments that the little seed of his sowing would in time bear fruit of such vast magnitude that his own victory in science, great as it undoubtedly was, would seem only a milestone in a vista of progress reaching all around the globe.

When civilized nations had about ceased to wonder at the marvel of the telegraph there came again the reminder of the human mind's limitless ambitions, and to add to the wonders of the world a new factor in rapid transmission was developed in the invention of the wireless system of telegraphy, the tremendous possibilities of which are only beginning to be realized. That the wireless has gone far beyond a mere experimental stage has been unequivocally demonstrated during the present war, when reports of events of the utmost importance are daily transmitted from the scene of conflict by means of this potent factor in the world's news-gathering service and published to the world in the *New York Times* in common with the *London Times*.

There is still another phase of telegraphy of which the public has as yet heard practically nothing, but which it seems has already reached a stage that promises remarkable results. J. C. Barclay, the assistant general manager of the Western Union, announced last month that the company is about to introduce a novel system by means of which any one capable of operating an ordinary typewriter will be able to transmit a message, which will be received in facsimile on a typewriter at a distant station.

"This is my own invention," said Mr. Barclay, "and it is practically completed. The message consists simply of the transmission of a positive and negative current, which forms a system of characters; each character sets the receiving instrument in a position to convey these characters to a receiving magnet. It will be possible in time for a newspaper correspondent in Chicago to transmit his matter directly to a machine prepared to receive it in New York, over 800 miles away. It will also be possible by means of this invention to apply the same principle to the linotype machine in newspaper composing rooms, so that as the correspondent sends in his messages they will be set up ready for the stereotypers. I have been working on this for over a year, and I am now in a position to say positively that it is in successful working shape.

"This anniversary of the installation of the Morse system," continued Mr. Barclay, "sees the telegraph system reduced to a science such as was hardly dreamed of in the olden days. At the time that Morse invented the telegraph, and for many years afterward, everything was done by guess. To-day the large number of electrical engineers can figure out what is required to operate our lines with as much exactness and ease as the civil engineers can calculate the equipment required in their efforts.

"The wireless system has already been developed to a point where its value in communicating off shore, between vessels, and between the mainland and islands near shore, is beyond cavil. I believe there is a great future for that system where it is not possible to use wires. Of course, it has not been demonstrated that the wireless can be worked for any considerable distance on land. That does not seem possible. We have now between here and the city of Philadelphia nearly 1,000 wires in operation. To replace them with the wireless would require an equal number of wireless transmitters. And so far it has been impossible to inaugurate two systems that would not interfere with each other. Whether that will ever be possible remains to be demonstrated.

"Perhaps no better exhibit of the marvelous development of the telegraph is to be found than in the records of the Western Union Telegraph Company's growth. In 1866 the company operated 37,380 miles of poles and cables and 75,686 miles of wire. It had 2,250 offices. In 1903 the record is 196,517 miles of poles and cables, 1,089,212 miles of wire and 23,120 offices.

"In 1866 it handled between 4,000,000 and 5,000,000 messages; in 1903, 69,790,866 messages, not including those sent over leased wires, railroad lines or leased press circuits. In 1866 the average toll per message to the public was \$1.047, and in 1903 it was \$0.314.

"When Morse invented the telegraph he invented the best system that had been introduced up to the present time. But he had no idea that the young American had such a quick ear for music that it would enable him to discard the old record register and take the messages by ear. I do not think that at the present time there is in use a single one of the registers for reading messages. Everything to-day is done by sound.

"The quadruplex invented by Edison makes it possible to transmit four messages simultaneously over one wire. We have also an important auxiliary in the Wheatstone system, which enables us to send a message over a line 500 miles long at a rate of 400 words a minute."

Starch Machinery for Mexico.—Some \$65,000 worth of American machinery will be installed in a new starch factory to be constructed at Aguas Calientes, Mexico.

Telephone Exchange Suspended in the Air.

ONE of the marvels of modern American methods in constructing buildings recently attracted attention in New York. A brick and iron building swinging in midair is the sight that was seen. While literally the structure was swinging from two tripod arrangements, the statement might be misleading to some who might be led to believe that they could expect to see it swaying to and fro in midair. This was the means taken to shore up the building during the process of making some additions to the Madison Square Exchange of the New York Telephone Company. The *Engineering News* gives full facts about the operation, from which some extracts are here made.

Perhaps no kind of business or building would be encountered by a contractor that would present more difficulties than those met with in a telephone building. The numerous wires entering the cellar of a central station, their running up to the several stories, their distribution close to walls and under the floors to scores of operators, the need of protection from noise, dirt, rain and the usual concomitants of building operations, make an alteration in a telephone central station one of rare difficulty.

The process adopted was much more expensive than the usual method, but was adopted as the only practical way of complying with the somewhat exacting conditions. The members of the firm which did the work and with which the idea is an entirely original one, submitted the plans to a number of architects, builders and persons engaged in similar work, and none would give it a hearty indorsement. All, however, regarded it with intense interest and watched the progress of the work from start to finish. It was a perfect success in every way. There was not the slightest interruption of the work of the exchange and not the least indication of a split or crack in the walls of the building.

400,000 Italians Are Becoming American Citizens.

SOME interesting facts about the progress which Italians are making in New York City have just been made public. There are nearly 400,000 Italians in New York. Fifty thousand of them are boys and girls in the public schools. There are 115 doctors, 63 druggists, 21 lawyers, 15 school teachers, 9 architects and 7 mechanical engineers.

Nearly all of the Italians in America come from three provinces in Italy. At home they were farm laborers, earning from 39 to 40 cents a day and living in little stone cabins. Some of the immigrants had small farms of their own, but the land is poor and the Italians have nothing to work it with except spades. Their life was a hand-to-mouth struggle against starvation and debt.

Since the Italians have come to New York they have acquired \$60,000,000 worth of property in the city. This is an average of \$160 apiece, or \$800 a family. They own \$20,000,000 worth of real estate. They have \$15,000,000 in the savings banks. They own 10,000 stores worth about \$7,000,000. And they have about \$7,500,000 invested in the wholesale business besides.

The Italians come here to stay, not to make money and go home. "Four or five years of America seems to unfit the Italians for living in their native country," says Adolfo Rossi, the Italian Commissioner of Immigration. They have presented three monuments to the city. One of them, the statue of Columbus, is a valuable work of art. They are now raising money to build a school of music in honor of Verdi. These are the sort of facts that all Americans should be proud of. Our national greatness rests upon such records as this one that has been made by the Italians."

Chinese Experts Studying American Methods.

MANDARINS V. K. Lee, Tsu King Yuan and Tse Shao Yung, three commissioners of the Chinese Government, are now in America. They are mandarins of the first-class and have been sent out to investigate the steel plants of America and England.

"China intends constructing a plant of her own for the manufacture of armor plate and steel rails," said Mr. Lee recently. "She already possesses a steel plant near Shanghai, but it is of an old pattern and not at all up to date. The new plant will be located in the interior somewhere, exactly where has not been decided. But we want the most improved machinery, the newest models, in order to turn out steel in quantity and of the best quality. Our party will stay four days in Chicago, and we will investigate the Illinois Steel Works. We shall be gone three months or more, and on our return to China will make a report to the Imperial Government."

Mr. Lee would not say how large a sum China is prepared to put into the establishment of the plant, but he intimated that the amount would be enormous, and that no pains would be spared. The Chinese visitors were greatly impressed with what they saw of American machinery and methods.

Our Trade with France.—United States Consul B. H. Ridgely, at Nantes, corrects some erroneous impressions regarding American trade with his district. As there is no direct line of boats most of our exports to his district are entered through other ports. He says: "For example, the statistics would make it appear that almost none of the canned meat imported at Nantes comes from the United States, but that virtually all of it is imported from England. The fact is that nearly all this canned meat is of American origin, but it reaches France via Liverpool. This observation, indeed, may be generally applied to all American products sold in this region, only a very small percentage being imported directly from the United States."

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 1/4 cubic feet. This cut represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/4 inches deep and 32 1/4 inches long. Made of selected quarter-sawed oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warehouses, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

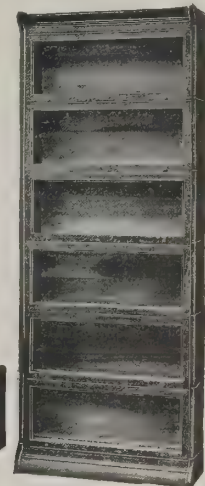
Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



Top Section
List, \$3.00

9 1/4" Section
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9 1/4" Section
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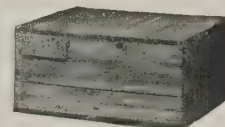
11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

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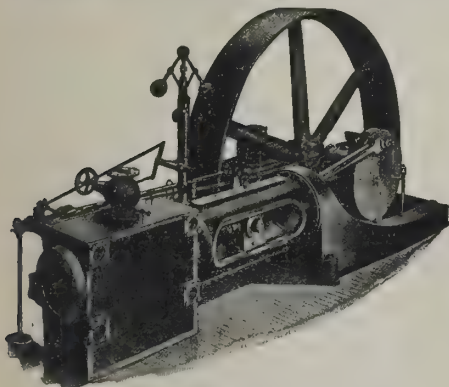
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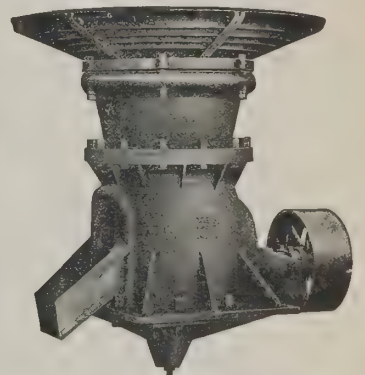
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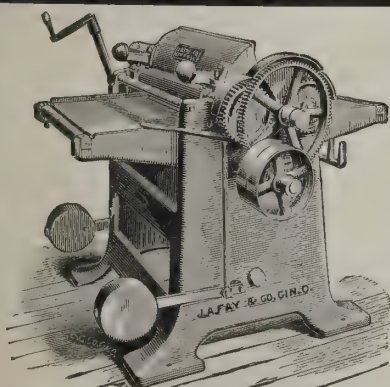
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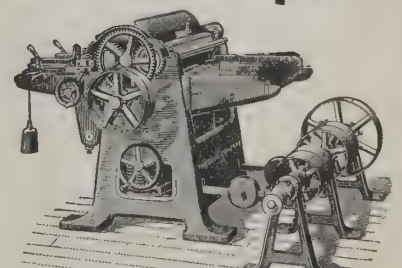
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The wood worker interested in knowing just what progress has been made in wood-working machines is invited to write us for particulars of some of the new ones we have just built. We will send him some information that will interest and surprise him. New catalogue free. Send for Sander book and pamphlet on care of Band Saws. We correspond in Spanish.



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Story of the Panama Canal's \$40,000,000 Check.

HERE is the simple story of how Uncle Sam took \$40,000,000 out of the United States Sub-Treasury in New York City, to pay the French for their Panama Canal stock, without disturbing the financial situation in New York much more than if somebody had bought a bag of peanuts from a sidewalk vender. Forty million dollars is a large sum of money in Wall street or anywhere else. If it had all been taken out of the Sub-Treasury at once, in gold, or silver, or even in greenbacks, it would have left a void, the bare sight of which would have given every banker in town a chill.

Such a rude and barbarous proceeding was not to be thought of in these days of high finance. So, instead of real money, recourse was had to those neat little slips of water-marked paper called checks. First of all the Secretary of the United States Treasury inscribed his name on a large number of checks, by which he gradually withdrew from many small banks scattered over the country several million dollars, which he concentrated in several large banks in New York, known as general depositories of Government money. Then the Secretary of the Treasury signed another series of checks, for larger amounts, by which he withdrew \$27,000,000 from the big New York banks, and put it to Uncle Sam's credit in the Sub-Treasury.

All was now ready for the \$40,000,000 transaction. Last month the Secretary of the Treasury signed a check or treasury warrant for that amount, jumped on a fast train, and brought it to New York in his inside pocket. He passed the warrant over to J. P. Morgan & Co., which firm had been appointed to disburse the check to the French owners of the Panama Canal stock. Next, J. P. Morgan & Co. turned their \$40,000,000 over to Sub-Treasurer Fish for collection. Then, instead of drawing one check for the whole \$40,000,000, the Sub-Treasury split up the amount in smaller checks, aggregating that sum. J. P. Morgan & Co. deposited \$25,000,000 of their Sub-Treasury checks in various big banks in this city, and kept \$15,000,000. With this latter sum the firm could have bought gold, either from the Sub-Treasury or from the banks, for direct transmission to France. They did not immediately buy gold so far as known.

Actually no gold or greenbacks figured in the transactions. All of the checks drawn passed through the Clearing House. The banks got \$25,000,000 in Sub-Treasury checks from J. P. Morgan & Co., and paid \$27,000,000 in Treasury checks to the Sub-Treasury. Their deposits were thus reduced only \$2,000,000.

How much of the \$40,000,000 will ultimately reach France, in the shape of American gold, can only be conjectured. Ten millions in gold has already been shipped, most of it, presumably, on account of the Panama warrants. The New York banks had \$22,000,000 in gold on the day the \$40,000,000 warrant was drawn in excess of their regular gold reserve of 25 per cent. The French may buy American goods or securities with a large part of their \$40,000,000, in which case the money will stay here.

Planning for a 75-Miles-an-Hour Train.

FAST electric trains that will make seventy-five miles an hour are being planned by the New York Central Railroad in connection with its improvements in New York City, which have heretofore been referred to in THE AMERICAN EXPORTER. About \$20,000,000 will be spent for electrical equipment.

Chief Engineer Wilgus, of the New York Central, made the statement last month that the system not only will use electricity in its tunnel, but will extend the electric zone to points further away. He said that when the railroad yards are enlarged (upon which work is now being pushed) they will take in fifty-seven tracks and will cover a large area, affording an entirely new distribution of the traffic inward and outward.

The new Grand Central Station in New York City in its main portico will be devoted to through-train traffic, with twenty tracks. Under this main station will be the suburban system, with from eight to twelve tracks. The electrification, said Mr. Wilgus, means extending the electric system from twenty-five to fifty-five miles from the Grand Central Station. The suburban trains will be handled by the multiple unit system, under which every car or two out of three cars will be equipped with electrical motors. Each car is therefore practically self-propelling, so that a single car can be started or fifteen in a train.

For the through trains it has been decided to use electric locomotives, which will be handled with 2,250-horse-power engines. The suburban trains will be capable of a speed of seventy-five miles an hour, and it is the intention of the company to eliminate small grade crossings.

American Tools in Japan.—Charles A. Francis, formerly of Hartford, U. S. A., and who is now in Tokio, Japan, writes that "at the present time the various agencies handling American tools cannot get them here fast enough, and that this year is the best known in the sale of American machinery." He also thinks the American machine builders should make a great effort to increase the trade in Japan for American tools. Mr. Francis was invited to a dinner given by eight members of the Shibaura Engineering Works, recently, at a Japanese hotel—"The Mihorashi." The hosts were all former students of the Tokio Koto Kogo Gakko, in which school Mr. Francis is an instructor. A very pleasant evening was spent, and with the help of an interpreter Mr. Francis was able to give quite a long and interesting talk on the methods of handling American tools, as well as suggesting some of the various ways in which these tools could be used to better advantage in turning out work.

American Machinery in Russian Ports.

CIVIL and mechanical engineers who reside in this country and who were retained on the work of creating the defenses of Vladivostok and Port Arthur state that not less than \$3,000,000 worth of American-made machinery is installed in those beleaguered places. The entire system of supplying Vladivostok with water was planned by Charles D. Pierce, M. E., manager of the Pierce Well Engineering and Supply Company, of New York, at whose works the machinery was made. The system for applying compressed air to military and naval engines at Russia's ports is wholly the work of William L. Sanders, M. E., formerly Mayor of North Plainfield, U. S. A. Mr. Saunders has spent much time in Russia and gave his personal attention to designing special apparatus for Vladivostok and Port Arthur which was made in this country. The Russian system for operating torpedoes is largely taken from the methods originated by John P. Holland, M. E., of this country, inventor of the Holland submarine torpedo boat, several of which are being made at Port Arthur. In the electric light and power installations used by Russia's army and naval forces in Asia there is an immense quantity of apparatus that was made in this country.

The armor of the Russian warship, the Variag, was made in strict conformity with the formula for the Harvey process supercarbonated armor, invented and made in the United States, and which caused the revolution of armor-making in all countries having an efficient navy. Russia has a consulting mechanical engineer who was long on the staff of Thomas A. Edison, the American inventor, and who keeps the general staff of Russia well informed about every invention made in this country which seems to be of value for military and naval purposes.

Russia's purchases of American-made scientific apparatus applied to military purposes began about sixty years ago, when Count de Nesselrode was requested by the Czar to investigate the conflicting claims of inventors with relation to the electric telegraph. The matter was turned over by de Nesselrode to Col. George W. Whistler, U. S. A., retired, sometime engineer of the Delaware and Raritan Canal Company, and father of the late James McNeal Whistler, the artist. Colonel Whistler at the time he made the inquiry into the invention of the electric telegraph had just designed and built the first railroad in Russia from Moscow to St. Petersburg.

Japan and Russia at American World's Fair.

BOTH Russia and Japan have exhibits at the American World's Fair in St. Louis. Russia started late and her display will be described in a later issue of THE AMERICAN EXPORTER. Japan's exhibit is the surprise and admiration of all countries, and in some respects is the most marvelous ever shown by any nation. To the public it is a revelation; to all observers it is conclusive evidence of the enterprise, industry and skill of the Japanese people. Everywhere in the Japanese exhibits—for there are more than 80,000 separate exhibits—thoroughness is noticeable. Nothing is left undone, but care is given to every detail, and there is a thoroughness that accounts for Japan's progress and success in peace and in war. This plucky little empire expended \$1,000,000 for World's Fair participation.

Japan's exhibits occupy space in the different buildings. She asked for more space than any two other foreign governments and secured an allotment nearly equal to her demand. Every one of her exhibit booths is beautifully decorated with inlaid natural woods and gold and lacquer, but the most picturesque part of Japan's representation is found along the terraced hillside covered by the buildings and gardens of the Imperial Government and on the gay and festive "Pike," where her quaint customs and interesting ways are enacted by hundreds of living Japanese types, the fascinating and graceful geisha girls being most noticeable. It is not Japan's gay life that is attracting world-wide attention, but the busy, active, industrial life of that wonderful country which in so short a time has risen to a position of prominence among the great nations of the world.

\$1,000,000 of Canned Salmon in a Month.

EFFECTS of the war in the Far East on the Pacific Coast trade of the United States were outlined a few days ago by Charles T. Takaboshi, who lives at Seattle, Wash. "The withdrawal," said he, "of the six Japanese liners that have plied between Seattle and Oriental ports for the last eight years, that they might be used in the transport service during the war, had a temporary depressing effect on some branches of activity in Seattle, but business is good again. The Boston line, on which greater demands have been made, is now dispatching an additional number of vessels, and important shipments of foodstuffs are going out not only from Seattle, but from Vancouver, Tacoma and Portland. Probably \$1,000,000 worth of salmon went from Seattle to the Orient last month. The flour shipments from Seattle have been steadily increasing each year. Last year they aggregated about 70,000 barrels, and owing to the larger demand incident to the war it is my belief that the shipments this year will reach 100,000 barrels."

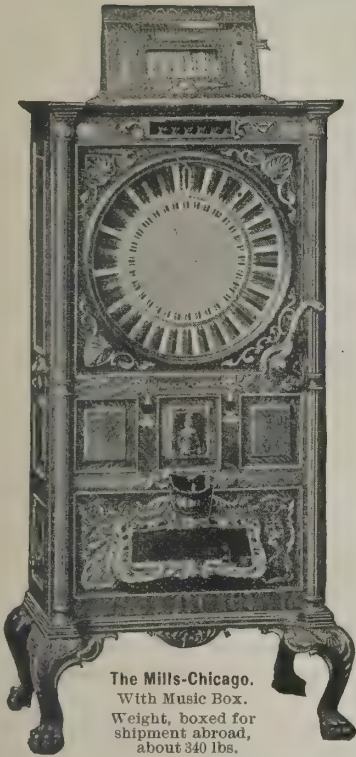
American Machine to Split Wood.—A Spokane (U. S. A.) man has invented a machine capable of splitting wood 2 feet long and 18 inches thick. The machine is run by a three-horse-power gasoline engine, and consists of a huge knife working through the knottiest wood at the rate of sixty strokes per minute. A contrivance to carry off the wood is to be added to the machine.—*American Woodworker.*

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Weight, boxed for
shipment abroad,
about 340 lbs.



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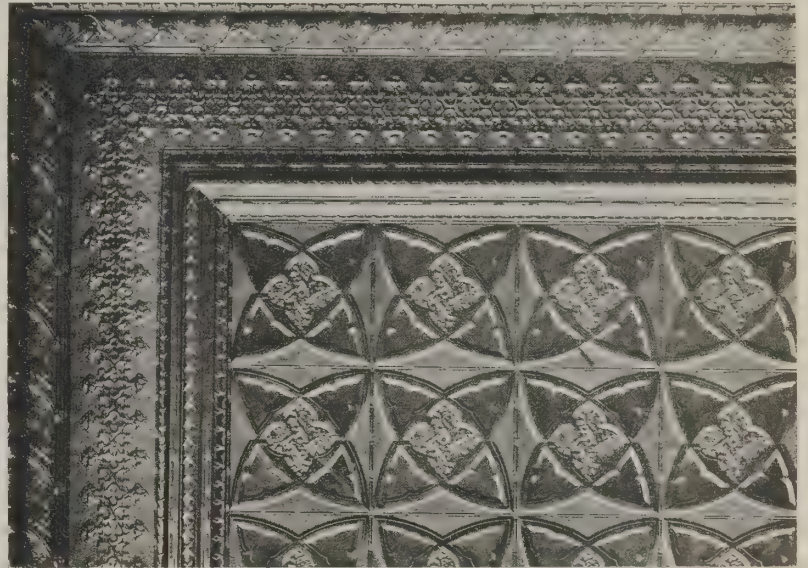
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All machines are boxed ready for steamer, and prices quoted will be f. o. b. cars New York or San Francisco. Orders received through export houses. When ordering through export houses specify MILLS NOVELTY CO.'S COIN-OPERATING MACHINES, and to avoid errors, please mail us duplicate of order.

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THE MONROE IS A HIGH-GRADE REFRIGERATOR, BUILT FOR THE HOUSEHOLD.

Each food compartment is moulded in one solid piece of porcelain. The corners are rounded. There are no joints or crevices for the food to decay in. The porcelain is white, durable, and as easily cleaned as a china dish. The ideal house refrigerator, absolutely sanitary. The prices here quoted for foreign markets only (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

MONROE No. 21, Style D, Solid Porcelain Inside, \$54.00
Oak Exterior,

Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.

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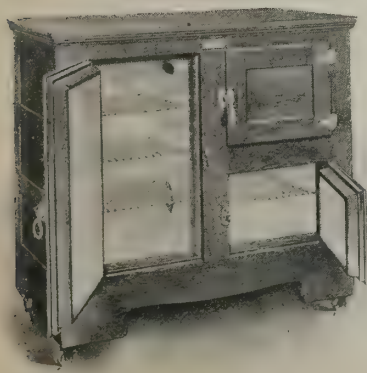
Crated, measures 49 x 27 x 57 inches. Gross weight, 820 lbs.

All sizes carried in stock ready for immediate shipment.
Special sizes built to order.

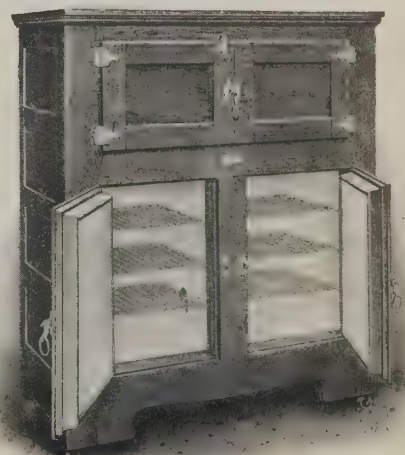
Our latest catalogue, illustrating and describing the various styles of Solid Porcelain Refrigerators made by us, mailed postpaid.

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Monroe Refrigerator No. 21. Style D.



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MONROE REFRIGERATOR CO., Patentee and Manufacturer, LOCKLAND, OHIO, U. S. A.

Two-Cent Postage, America to Europe, Perhaps.

OUR readers in various quarters of the world will be interested in the outcome of the session of the Universal Postal Congress, which will soon be held in Rome. The congress will comprise the most cosmopolitan body of distinguished representatives of Governments that ever met in the Italian capital. Every civilized nation is directly interested in its deliberations, and the congress is likely to be one of the most important in the history of the Universal Postal Union. The United States Congress has appropriated \$7,500 to defray the expenses of the United States delegate, Eugene F. Loud, of California, and efforts are being made by the United States to have the cooperation of other governments in a number of radical experiments in postal service, so that the results may be available as a working basis for the consideration of these propositions at Rome.

Two-cent postage with countries like Great Britain and France, universal postage stamps and a tariff schedule for mails in transit in countries other than those in which they originate, or for which they are destined, are some of the subjects which are being discussed among postal officials.

Another important feature will be the inclusion of China in the union. The Celestial Empire is now the only important Government in the world which does not belong to the vast postal federation. She has already given notice of her intention to join, but war troubles delayed the organization of a modern system there. There are sixty-five countries in the union.

Postmaster-General Payne is strongly in favor of the application of 2-cent postage to foreign letters passing to and from France, Great Britain, Germany and countries similarly situated, where there is direct and quick transit. He has talked this over with the British Embassy officials, and representations on the subject have been made to Great Britain with a view to action in the near future. This would put these countries in the same postal relations with this country as Canada and Mexico. Facilitation of international correspondence is to be sought by adopting a universal postage stamp.

Several countries have also addressed communications to the American Government suggesting different forms of prepaid reply missives. Notable among these are France and the Netherlands. Several objections have been raised to reply missives which depend for their prepaid postage on the use of a stamp printed and sold in another country. Every country is disposed to jealously guard its right to receive cash in advance for the service it undertakes to perform in mailing a letter.

Second Assistant Postmaster-General Shallenberger has devised a plan which requires that every letter shall have upon it the stamp of the country in which it is mailed and which may be conveniently paid for in the country which has invited the reply. Each country, according to this plan, is to prepare and sell special government international reply postage envelopes at 10 cents each, having one five-cent stamp or its equivalent embossed on the right hand corner, to be canceled when mailed, and a similar stamp on the left of the envelope to remain uncanceled.

The first stamp is to pay outward passage, half ounce weight. The second stamp is to render the envelope, when relieved of its enclosure, good for the purchase of a reply stamp of like value at any post-office in the country of destination. Postmasters are to be instructed to take credit for these envelopes in their stamp account and to forward them to the central office to be redeemed for cash by the country of origin in accounts between the two countries. Postage stamps the world over are at present good only in the country of issue. The difference in the monetary values of the various countries is one of the main objections to the scheme.

The congress undoubtedly will dispose of the vexed question of transit rates for mail crossing intermediate foreign domain, a vital problem which has confronted every convention since the inception of the postal union, and has been as often undisposed of. The effort at Rome will be to reduce these rates materially and to make one fixed rate, instead of a gradual decrease in rates as at present. This Government is in favor of this plan and also of making the transit rates on letters and on printed matter identical.

A graduated reduction was arranged at the last postal congress, held in Washington in 1897. Every grain of weight so carried across another's country is scrupulously paid on the basis of statistics taken once in three years. Some countries seek the total abolition of these rates and the substitution of an arrangement by which each country carries the mails of all others free.

The United States is on record for this reciprocal arrangement, and its delegates to the Vienna congress in 1891 carried specific instructions to vote for such a plan. It was smothered, however, in committee, as a concession to secure the adhesion of the Australasian colonies to the union. Germany also has advocated a plan of taking the average figures for each country in the last two or three statistic periods as a permanent basis.

One Secret of American Success.—*Power and Transmission* says the secret of the cheapest of American manufactures is claimed to be, partially at least, in the interchangeability of parts of every mechanism, in the standardizing of constructions. A mechanical invention in this age is not complete till the tools to make it in interchangeable parts have been invented.

Largest Steel Oil Barge.—The biggest oil-carrying steel barge in the world, Standard Oil No. 94, recently built at Shooter Island, U. S. A., arrived recently in New York on her first trip from Port Arthur, Tex., with 50,000 barrels of oil, the largest cargo of the kind that has ever been carried in one bottom.

Gain in Exports of Wire, Wire Nails and Pipe.

RETURNS for April show that very nearly 10,000 tons of wire, wire nails and pipe were exported through New York and other Eastern seaboard points last month by the United States Steel Corporation. Shipments in March aggregated only about 7,500 tons.

The exports of wire amounted to 4,172 tons, as against 3,748 tons for March. The chief April consignments went to Australia, five shipments amounting in all to 1,338 tons going to that part of the world. To South Africa 1,320 tons were shipped, the Argentine Republic having been shipped 796 tons. To Brazil was sent 458 tons, while the balance went to Chili. To Europe 981 tons were shipped, 594 tons of which went to ports in the United Kingdom. To the Continent 387 tons were forwarded. Two hundred and fifty tons went to South Africa. Cuba received 183 tons. Shipments also went to Mexico, Malta, China and Japan.

The pipe exports aggregated close on to 4,000 tons, being an increase of 100 per cent., compared with the exports during March. In April Europe was the largest buyer, especially the Continent, to which 2,737 tons were forwarded.

Over 1,600 tons of wire nails were sent to various foreign countries in April, chiefly to Europe. About 900 tons went to Europe, 759 tons going to the United Kingdom and 152 tons to the Continent. Two hundred and fifty-eight tons went to Australia. Two hundred and thirty-two tons were shipped to South America, Chili receiving 205 tons, while the balance went to the Argentine Republic. To China and Japan were sent 116 tons. Smaller lots went to Malta, South Africa and Cuba.

Our Shoe Machinery, as Well as Shoes, in Demand.

SHOE exports have made rapid gains, and the future of this branch of the American trade abroad seems to be assured, although foreign manufacturers are awakening to the fact that the American product is a vigorous rival to their own output. At the outset the foreign manufacturers laughed at the idea of our manufacturers securing a foothold in their markets to an extent that would affect them, but now they realize that American footwear has gone forth not only to capture the foreign markets, but to hold them afterward. The great selling card of American footwear has been style, finish and durability. To secure a strong foothold in any foreign country our manufacturers have had to study the conditions ruling in the section that they were after. This has been done to some extent, but the time has now arrived when even closer attention will be paid to this end of the business.

Foreign manufacturers now know why our footwear has met with favor in their home markets, and are trying to overcome this popularity by producing a similar shoe. They have come to this country and bought the latest improved machinery. They have examined into our methods, bought our leather, studied our styles, and have even gone so far as to engage skilled workmen to go back with them to teach the native help the way that shoe manufacturing is carried on here. This is paying our manufacturers a very high compliment.

American Currency in Canada.

A SPECIAL telegram to the *Halifax Chronicle* from St. Johns, New Brunswick, states that the Clearing-House directors have decided to accept American currency at face value in all the city banks. Heretofore one-fourth of 1 per cent. discount has been charged. A Canadian bank manager, speaking of the new rule, said that the reason was that American money was supplanting Canadian currency and limiting the circulation of Canadian notes. A great deal comes across the American border and finds its way into St. Johns. As a discount was charged at the banks, merchants used the American money to pay their help and thus its circulation was aided. Now the banks propose to accept it at face value and will promptly ship it to the United States. Thus are the two great transcontinental countries of North America placed one step nearer the fulfilment of the dream of the late Erastus Wiman.

Formosans Studying Our Methods.—S. Nimoso and K. Endo, engineers of the Formosan Railways, are in the United States on a tour of observation. They are reported to be greatly pleased with American methods and have highly praised the plants which they have inspected. Mr. Endo said recently "It is really wonderful the way your factories produce such excellent goods. Your machinery seems to be close to perfection and your workmen are extraordinarily diligent and attentive. They all take an interest in their work and do not apparently have to be watched. I shall no longer wonder how Americans are able to do what have sometimes seemed to be miracles in the line of manufacture."

London's New Tubes.—Some of our British readers will be interested in the statement made in New York a few days ago by Charles T. Yerkes, who came over for a business visit, that the "tubes" in London proper would be running by January 1, 1905, and that the entire system would be in working order within two years. The tunnels lie sixty feet beneath the surface of the streets. In the cases where the tunnels pass under private property the tunnel company had to buy the easement from the property owner, since, according to English law, the owner's rights extend to the center of the earth and upward an indefinite distance.

"St. Louis A. B. C. Bohemian."

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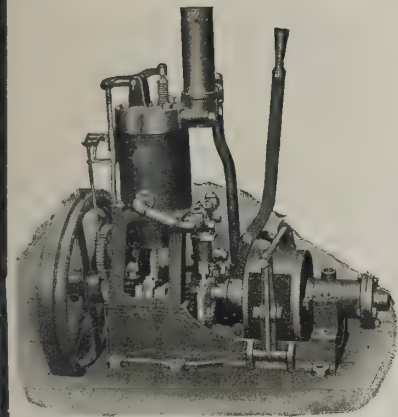
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—one, two and three cylin-
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TARR & WONSON'S COPPER PAINT

For Wooden Vessels' Bottoms, prevents
boring of worms and all marine growth.

Awarded Eight Highest
Medals:

Gold, Silver and
Bronze.



Excels on Every
Point.

Cheapest to Use in
the End.

TESTIMONIAL.

NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,
(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

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RACING COMPOUND for Wooden Yachts' Bottoms,
Bright and Smooth.

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GLOUCESTER, MASS., U. S. A.

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GOLD MEDAL (The Highest Award) at the Pan-
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GOLD MEDAL, Paris Exposition,
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that in the Model Dairy at
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Excelled Everything, averaging
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The United States Sepa-
rator stands without a peer,
the most thorough Separator
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Dairy size U. S. Separators
run easily by hand but can
be operated by power if de-
sired. Capacities range from
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\$50.00 to \$165.00.

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AMERICA'S POSSIBILITIES.

Richest Man in the Country Talks of His Early Training, Trials, Struggles and Successes.

JOHN D. ROCKEFELLER is unquestionably the richest man in the United States, and he is probably the most wealthy private citizen in the world, not excepting Andrew Carnegie. Mr. Rockefeller controls practically all of the oil output of the world outside of Russian influences, and he is interested in many other business enterprises. The Standard Oil Company, which he created, is a symposium of varied industry. There are subsidiary companies to do everything required in the trade, dig the wells, make the barrels, supply pipe for the pipe lines and take care of practically everything that enters into the operation of the industry. Mr. Rockefeller is religious and his philanthropy runs in that direction, but he has given millions for educational purposes.

Mr. Rockefeller's early life, as told by him recently to his son's Sunday-school class, was very interesting. As printed in the New York *Herald*, it is too long to give in full, but some extracts go to show the youthful trend of life and thought of a man who is at the same time the most modest and the richest man in this country. The story that he told was one of the preliminary training, the trials, struggles, successes and failures which ultimately transformed a poor country boy into one of the wealthiest men of the world. For an hour Mr. Rockefeller gave facts, narrated details of those early days, commenting on them, drawing from them aphorisms for the guidance of his hearers in their own struggles. There was nothing boastful about the address, no self-glorification.

To a business training, begun at home at the age of 8, an early understanding of the value and importance of money, hard work, carefulness and good association, Mr. Rockefeller attributed his success in life.

"We meet as friends," said Mr. Rockefeller, "and if I were to give one reason among others for my securing the first position in business—my footing, my first start in life—it would be that I had had the good fortune to be associated in my early boyhood with such dear friends as you. The association into which I was called at 14 in the church and in the schools with good men—with good young men—the association in which I found occupation in the church, in the Sunday-school, in the Young Men's Christian Association, helped me more than I can tell you to make the beginning, to begin my life work. I would name as another help in this same direction the fact that from my earliest recollection I had a peculiar training in my home.

"It seemed to be a business training from the very beginning. I was taught to do things—simple things such as a boy could do. I was taught to be self-reliant. At the age of 7 or 8 I was taught as a boy in the country to milk a cow. I could milk a cow as well as a man could milk a cow. That is a very simple thing to refer to, but that is one of the things I began to learn.

"I was taught at the age of 8 to drive a horse and to drive him just as carefully as a man could drive him. I remember very well the instruction of my father: 'My son, hold him very carefully going down the hill. Do not let him stumble, and when you are on the level road let him trot right on.'

"I shall never forget that. I was taught to do as much business at the age of 10 and 11 as it was possible for me to do. Among other things I was sent over the hills to buy cord wood for the use of the family. I knew what a cord of good, solid beech and maple wood was. My father told me to select only the solid wood and the straight wood, and not to put any limbs in it or any punky wood. That was a good training for me. I did not need my father to tell me or anybody else how many feet it took to make a cord of wood. I did not require the presence of anybody to enable me to secure from the man who sold that wood good measure.

"There were many other such like things I was taught to do, and when I was a little older my father commissioned me to build a house, and he said: 'My son, here is the money. I want you to build a good brick house that will make us a home.' I employed an architect; we made out the contracts, and we built the house. We had no trouble with the architect or the contractor. That gave me a great deal of confidence. Everything came out all right. I have the evidence of that in a little mahogany box that I treasure. I have all those receipts, all those statements that were made. That was a valuable experience for me.

"Among the early experiences that were helpful to me that I recollect with pleasure was one in working a few days for a neighbor in digging potatoes—a very enterprising, thrifty farmer, who could dig a great many potatoes. I was a boy of perhaps 13 or 14 years of age, and it kept me very busy from morning until night. It was a ten-hour day.

"I was in school, my father had a number of children to take care of; he was not a rich man, but he kept me in school until I was 16 years of age. I had expected to go through college and enjoy the advantage that many of you gentlemen have enjoyed, and I congratulate you, but I cannot say that I regret that circumstances seemed to require me to begin to take care of myself.

"I left school at 16 and entered a commercial school, where I remained for two or three months, and then, in the year 1855, I began to look for something to do, and all those years from 1855 to 1860 were very trying to us in business. Many of you gentlemen are too young to know about the dreadful panic we had in 1857. It left a blight that we did not recover from for many years. After many days and weeks of earnest endeavor I succeeded in getting a promise one morning that if I would come back in the afternoon they would see if they would give me a situation."

Mr. Rockefeller obtained the position. He was there early. His subsequent advancement to the position that he probably would not claim, although everybody concedes it, is a matter of common knowledge in America. The details would fill an entire issue of *THE AMERICAN EXPORTER*. Perhaps enough is said when it is printed that Mr. Rockefeller's fortune is so near to \$100,000,000 and is growing so fast that he can spend millions for religious and educational purposes where the ordinary rich man confines himself to thousands, without appreciably affecting his income. Mr. Rockefeller is a practical American. He has done things in a practical way. He saw his opportunities and took advantage of them. He is of the type of Americans who *do* things. His oil company is colloquially called the Standard Oil Trust. The price of oil is about one-third what it was when Mr. Rockefeller reached the point in his career that called for the formation of the Standard Oil Company. He has simply operated on the American principle of giving the best goods for the lowest price at which a reasonable profit can be made.

Laborer Rises to Be Railroad President.

ONE new instance of the chance for advancement of bright Americans has come to the surface. From a toiler in the machine shops of the Chicago, Burlington & Quincy railroad to the presidency of the Chicago, Rock Island & Pacific Railway, which is one of the Burlington's chief competitors, is the career of B. L. Winchell. Announcement of Mr. Winchell's elevation to the presidency was made last month.

B. L. Winchell, who can quote Latin or discuss the theory of Atlantis, was a country-bred boy and received a meager education in his youth. He is a self-made and self-educated man. Popularity with his employees is, according to his friends, one of the chief reasons for his advancement. He was born in 1858. He began his railroad career in the shops of the Burlington railroad in 1874. He was later transferred to the auditor's office, and from there to the passenger department. In 1880 he became general passenger agent of another road.

He was elected vice-president of the Colorado & Southern in 1888 and later president of the Kansas City, Fort Scott & Memphis. When this road was purchased by the 'Frisco Mr. Winchell was made vice-president and general manager of the larger system. About three months ago Mr. Winchell was chosen third vice-president of the Chicago, Rock Island & Pacific. These are all important railroads in the United States.

New Facts as to International Postal Progress.

FOR those who like figures and comparisons the May report of the Universal Postal Union is interesting. The statistics show that Germany is still the land with the most postal employees, and that the United States still has the largest number of post-offices. Germany counts 242,000 heads in its combined postal and telegraphic service. Uncle Sam comes next with 239,000 postal employees. Great Britain follows as third with 184,000, and all of the other countries in the Postal Union add only another hundred thousand, France with 81,000, British India with 60,000 and Austria with 59,000. Japan and Russia have about the same number of postal employees, less than 40,000.

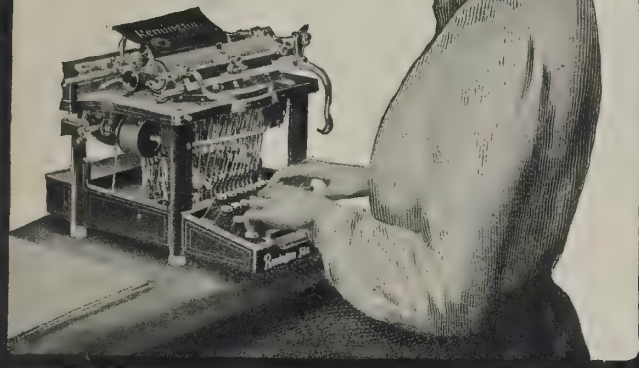
The United States has more post-offices than other country in the world—77,000. Germany comes second with a total of 46,268. Great Britain comes next with about half of Germany's number—22,000. British India has 14,000, all of Russia 12,000, and France 11,000. Uncle Sam has the most street letter-boxes, 129,000, and Germany comes near him with 126,000, but France has only 68,000, Great Britain 58,000, British India 51,000 and Austria 31,000.

Oil Keeps Out of the Steam in Turbines.

ONE of the claims for the steam turbine is that, since it has no surfaces working in contact other than the bearings—and these are out of the path of the steam—the exhaust is free from oil and the condensation may be safely used over and over again for the boiler feed. The importance of this advantage may be realized, when it is remembered that the water bill for some of the large metropolitan stations is upward of \$70,000 per year. In the earlier machines some oil did work into the low-pressure end, being drawn in by the vacuum from the contiguous bearing. The *Central Station* suggests the moving of this bearing away and the use of a stuffing-box between it and the low-pressure end. This suggestion has been anticipated by the better expedient of putting a little centrifugal pump back of the bearing, as shown in our April issue, which pump maintains a water pressure in a chamber through which the oil would have to pass greater than that of the atmosphere, and prevents the atmosphere from pushing it in. At the same time the water is kept away from the shaft, so that it does not enter while the turbine is in operation.—*Power*.

Wanted, Oil Mills.—A. Marsden, Chief of Customs in the East Africa Protectorate, says in a recent report: "It is difficult to understand why no attempt has yet been made to erect oil mills for the production of castor oil. Considerable quantities are used by the Uganda Railway, and hitherto it has been imported from India at a price varying between Rs. 2.6 to Rs. 2.10 per gallon. For the most refined quality I believe an elaborate and expensive machinery is necessary, but a fair marketable quality could be turned out by an ordinary mill, such as is used for the extraction of coconut and sim sim oil. The two protectorates are full of the castor oil plant, which grows in profusion and requires no cultivation."

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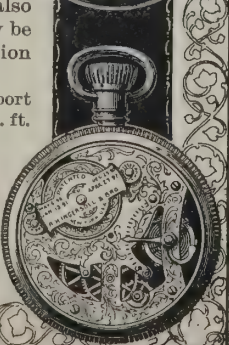
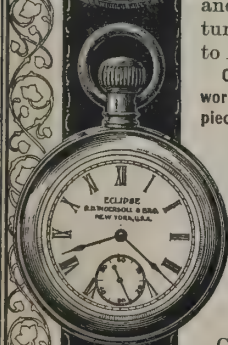
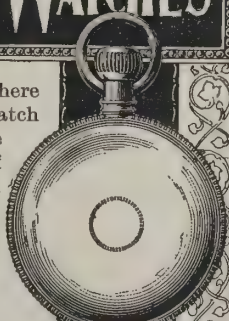
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American Competition vs. German Trade.

UNITED STATES CONSUL GENERAL MASON, at Berlin, Germany, in a recent report to the Department of Commerce, presents some new facts regarding trade between the two countries. He says in part: "As part of the general industrial development of Germany there is a feature of growing importance concerning which little seems to be known or realized at home, and this is the productive capacity of manufacturing plants established in this country by Americans themselves, equipped with American machinery and operated under American direction and methods. Probably no European country has so many of these offshoots from American manufacturing industries as Germany, which grants to such alien enterprises practically the same privileges and requirements granted and imposed upon native firms and companies.

"Legal obligations to labor, police regulations as to solid and fireproof construction, and other legal conditions make factory management in Germany more difficult and troublesome than at home, but the American managers comply successfully with all such obligations and, being on the same footing as their native competitors in similar lines, they have a definite advantage for the European trade over their own or rival firms and companies in the United States.

"This advantage embraces several elements—the saving of ocean freight and import duties, the employment of cheaper labor, and the fact of being able to compete as local manufacturers for municipal and Government contracts that would not be accorded to foreign bidders. The net result is that there is built up within the frontiers of European states a vast group of manufacturing establishments of the most modern type, based to a large extent upon local capital, but enjoying all the advantages of American experience, machinery, and operative skill, for the managers and foremen of these factories are picked men from the factories in the United States.

"Their workmen are mainly natives and there is thus set up a series of special industrial schools, where men and boys from the best class of local operatives are trained by American experts in the subtlest details of their craft. And when, as happened during the depression of 1901-2, a large electrical manufacturing establishment of this class at Berlin got into a situation where expenses had to be reduced an American industrial doctor was sent for to diagnose the case to the last detail and prescribe the proper remedy. There are thus to-day, among others, within the limits of Berlin an outgrowth of the great machine-tool works at Hamilton, O., U. S. A., three large electrical manufacturing companies closely allied to similar organizations in the United States, and one of which is a direct offshoot from the parent factory in Brooklyn, U. S. A., and is, perhaps, the principal producer of small electric motors and paper insulators for the whole of Germany.

"An American match factory in Baden practically dominates that branch of industry in southern and western Germany. The Luxfer prismatic glass and American radiators are made here by branch works of the home companies, and an American factory at Hanover supplies pneumatic brakes for the whole Prussian railway system. Another important combination is that which has been recently concluded between the American General Electric Company and the Allgemeine und Union companies, of Berlin, to unite in the possession and working of the Curtis and Riedler-Stumpf patents for steam turbines and turbo-dynamos. They have mapped out in combination their respective spheres of influence, and their operations will cover exclusively, so far as their patents are concerned, the whole of Europe and America."

Consul-General Mason in commenting upon the facts heretofore set forth, fears the results will be to curtail the export trade of the United States, in which view we believe he is mistaken. American methods and machinery are constantly improving. Machines that make machinery wear out in five years or so and sometimes before they lose their usefulness in America there are new and improved machines that make it a matter of economy to replace the old with the new. Whether Germany buys our machinery or our products, there is no danger of a diminution in our exports to that country, at least not for the reasons mentioned in the consul-general's report. On the whole, we are inclined to consider that the conditions he reports show a remarkable and not unexpected appreciation not only of the worth of our manufactured exports, but of the machinery used to put them into form. Taking also into consideration the growth of the demand of enlightened humanity for the necessities and luxuries that most people are now able to afford, it is a recognition of American progressiveness, as well as an exhibition of German acuteness of discernment, that our machinery is in favorable request in that country.

The American Invasion of Mexico.

MEXICO is one of our North American republics, but it has attracted less attention than circumstances seem to justify. From information given in an article in the *Booklovers' Magazine* for June it would seem that Mexico is almost a part of the United States. The writer points out that the extent of the American commercial invasion of Mexico is not fully realized by a majority of people. A year ago it was officially reported that more than eleven hundred American companies were doing business in Mexico. Of the capital from this country invested there about 70 per cent. is placed in railroads. All of the lines except those connecting the capital with Vera Cruz and the National Tehuantepec Railway are owned or controlled by Americans. Eighty per cent. of all Mexican railroad property is held in the

United States. Eighty millions of American dollars are engaged in Mexican mines, principally in Sonora, Chihuahua and Durango. The mining outputs of the fiscal year ending June 30, 1903, amounted to \$145,000,000—valued in silver—being an increase of nearly 50 per cent. over any preceding year. In the same time nearly three thousand new mining enterprises, or 17 per cent. of the whole, were launched.

In various agricultural ventures Americans have \$28,000,000 staked; but this includes probably some of those enterprises which appeal to the trustful small investor through popular advertisement, and concerning which our consular agents have often sent warnings to the Washington authorities.

Varied manufactures in the Federal districts and in Nuevo Leon absorb much American capital. In Sinaloa we also operate a profitable group of sugar refineries. To the northward many great iron and steel plants are in evidence. One of them, just completed at Monterey, has cost fully \$10,000,000.

Close Contest for Lead in Domestic Exports.

IT is quite apparent, according to the figures of the American Department of Commerce, that the United States is to head the list of nations as an exporter of domestic products in the fiscal year which ends with the coming month. The contest for supremacy as an exporter of domestic products has been for several years between the United Kingdom and the United States. Until a comparatively recent date the United Kingdom stood at the head of the list.

During the past few years, however, the United States has on several occasions exceeded slightly the figures of the United Kingdom, and the latest statements of exports make it evident that in the fiscal year 1904 the United States will be considerably in the lead.

The figures of domestic exports of the United Kingdom for the nine months ending with March, 1904, were \$1,073,538,366, and of the United States, \$1,149,330,670, the total domestic exportation of the United States for the nine months in question being thus \$76,000,000 in excess of that of the United Kingdom. These figures, it will be observed, end with March. For the month of April the figures of the United States, as announced by the Department of Commerce are \$107,535,655, against \$107,692,056 of domestic exports in April, 1903. While the figures of the United Kingdom have not yet been received, it is apparent that no sufficient change could possibly occur in the two months to reduce the certainty that the total exportation of domestic products from the United States in the fiscal year ending June 30th next will exceed that of the United Kingdom or any other country.

A further study of the exports of the United States compared with those of other principal countries shows that not only is the United States the largest exporter of domestic products, but that its exports have grown with greater rapidity than those of any other country.

Our Novelties in Demand in Foreign Lands.

THERE is a quick, eager market in foreign lands for novelties, for practically every new thing, be it a machine, a new lamp, or motor, or fixture of any kind that is inherently original and superior and will do its work cheaper or better than anything of the same kind now in use—the sort of things that Americans are continually turning out. Attention to the fact is called by United States Consul-General Mason, at Berlin, who also says: "Nowhere is the ingenuity and mechanical skill of Americans, their mastery of industrial methods, and their restless spirit of progress better understood and more highly appreciated than in Germany. Nowhere can an American with a really improved machine or product find a more prompt and ready purchaser than here.

"As examples of the kind of machine tools that are wanted may be cited the following that have been recently inquired for: A full equipment for making small tubs for butter, lard and other oleaginous products; a machine for cutting a spiral peel or veneer from round logs, which is used for making small boxes and baskets; and bending machines for shafts, fellies and other parts of vehicles. An automatic machine for trimming slabs of seed-oil cake was recently offered in Germany by an American inventor and proved to be superior to the English apparatus now in use for the same purpose. There is, of course, the consideration that every such machine sold and installed in a country like Germany only equips and strengthens this country for keener competition with American manufacturers at home, but such are the chances of international trade; we must recognize facts as they are."

American Machinery in Germany.

H. W. HARRIS, United States Consul at Mannheim, Germany, thus comments upon the opportunities for American machinery in Germany: "There are many lines in which the American machine and implement manufacturer may fairly hope to share in the trade of Germany for many years to come. This will be especially true when his wares are protected by patents, when he can produce them at a minimum of cost, and when cheaper raw products or other causes may assist him. Simplicity of construction, speed of operation, durability, ease of adaptation to various conditions, and relatively lower price will continue to commend our machinery. Each year will continue to emphasize anew, however, the fact that the German machine and implement manufacturer is alert to the situation and has made marked progress in all directions."

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Stanley's Success and American Enterprise.

MOST of our readers know a great deal about Sir Henry M. Stanley, G.C.B., D.C.L. and LL.D., who died in London last month. He was regarded in this country as much more than half an American, for he obtained his start in life here, and it was New York enterprise that made possible his great achievements. Without the backing of the New York *Herald* he could not have won his chief successes of interest, indirectly at least, to international trade. This account of Stanley's career, published in the *Week's Progress*, gives less credit to the American who furnished Stanley with the instructions and the money to carry out his exploits than ought to be given, but it is the most condensed story of his life that we have seen:

"A pauper child, named John Rowlands, was reared in a poorhouse in England. Sir Henry M. Stanley, G.C.B., D.C.L. and LL.D., died in London on May 10th. The two were one, for the pauper child beginning life in the almshouse, then setting out as a cabin boy, was adopted by a New Orleans (U. S. A.) merchant, whose name he took, and became famed as an explorer, as a lecturer and as the man who found Livingstone and who led the expedition which relieved Emin Pasha. So much for force of character. During the American Civil War he served in the Confederate army because of his Southern predilections and later reached New York, where he sought journalism as the opening for his talents. Being connected with the New York *Herald* under the elder James Gordon Bennett, he was sent in 1868 to Abyssinia with the British expedition. A year later, purely as a journalistic enterprise, the proprietor of the New York *Herald* started him off at the head of an expedition to find Livingstone. This was journalism—reporting on a large scale—which makes some modern newspaper reporting feats seem small. Dr. Livingstone, the missionary and explorer, had been missing and unheard from for two years. Stanley was sent to get news of him. He reached Zanzibar in January, 1871, organized his search expedition and started for the island in March, with 192 native followers. He found Livingstone at Ujiji, on the shore of Lake Tanganyika, in the following November, furnished him with supplies, explored the lake with him and then left him just as Livingstone started out on his last expedition, during which he died. Stanley returned to England in March, 1872, and found himself famous. The British Association entertained him, Queen Victoria sent him a gold and diamond snuff-box and the Royal Geographical Society dined him. In 1873 he was sent to Africa again and explored Lake Victoria Nyanza after great hardships. He descended the Congo in a memorable trip of eight months and came back to civilization on a Portuguese man-of-war. Then, in succession, he explored the Congo and founded the present Congo Free State, and Stanley Pool on the Upper Congo is named after him. His last great work was the relief of Emin Pasha, who had been left behind in Central Africa when the Mahdi swept over the Soudan, wiping out the outposts of Egyptian civilization. He found Emin and brought him home. He was decorated with the Legion of Honor and for his achievements distinguished honors have been paid him. He was made a member of Parliament and has written many books of travel and of exploration."

A "Corner" in Rubber Considered Impossible.

RUBBER is a commodity of trade which receives little attention in the public prints, but is, nevertheless, an important and interesting element of commerce. We recently received a communication from a subscriber in Paris asking some questions concerning rubber. A writer in the American magazine, *Cent Per Cent*, gives some information that fully answers our French friend's inquiry and which may interest other readers as well. This writer says:

"It must be noted that the manufacturers of rubber goods, as a rule, have never been accustomed to study the conditions which make the prices at which they buy in the market nearest to them—Americans at New York, the British at Liverpool, and so on. But rubber may change hands many times between the forests and these markets, and the only rubber that is really controlled by the importer at New York, for instance, is what he actually has in hand at any moment.

"The interest to us at this moment is to consider whether crude rubber can really be 'cornered'; or, rather, whether the increasingly higher prices for several years past have actually been due to speculative influences. It must be considered, in the first place, that the rubber which comes every year to New York and to the leading markets of Europe is derived from many hundreds of sources, each contributing a relatively small amount. For instance, hundreds of merchants at ports south of the United States owing money to New York merchants make occasional shipments of produce against these credits, either direct to these merchants, or to New York banks for their accounts. It is the same thing with the rubber which finds its way to Europe. In order for rubber to be 'cornered,' it would be necessary for all of these numerous consignments—from hundreds of Southern shippers to scores of New York houses—to be controlled by one influence, and of this no proof has been forthcoming.

"But suppose all the rubber consigned to New York were controlled by one speculative agency, what about the shipments to Europe, amounting to about the same every year in volume? Rubber is received at Liverpool, London, Hamburg, Havre, Lisbon, Antwerp, and so on—in every case from parties whose interest it is to make shipments direct to this or that port. And if, tomorrow, the price of rubber should be 1 cent a pound lower at any one of these ports than at another port, New York included, that port would at once

receive orders for rubber, since 1 cent a pound means \$20 a ton, and at that difference it pays to ship rubber.

"The fact is that no influence under the sun controls the amount of production of rubber in any country, as well might one try to control the number of tribal disturbances among the innumerable families of Indians who, in the first instance, produce the rubber. But when the rubber does find its way—in boxes and bags and barrels and bales and in skins of animals and in loose packages—to such markets as New York and Liverpool, the selling price is affected very materially by the state of the demand. If the stocks at a given date are small, and the buying demand is very active, prices go up; if conditions are reversed, prices go down.

"To sum up, it is a serious mistake to regard existing rubber prices as due to any important extent to other influences than the ordinary laws of supply and demand. The intending producer of rubber, therefore, can confidently look for a profitable return for his investment, even for generations to come, if not to the end of time."

American Water-Filtration Plants in Russia.

IN many of the cities of Russia the American system of water filtration has been adopted. Owing to the turbidity of the large rivers in Russia, they are very objectionable as sources of supply for municipalities or for such manufacturing purposes as paper-making, bleaching, dyeing, the making of chemicals, etc., unless the sedimentary matter carried in suspension is first removed. In 1898 the chief engineer of the Moscow water-works was sent to the United States to investigate and report on the American system of rapid filtration. On his return to Russia experiments were undertaken which demonstrated that by the American system extremely turbid waters could be rendered bright and clear at a rate of filtration fifty times as fast, and with only about one-thirtieth of the space required under the old sand system, while from the sanitary standpoint the bacteria were reduced over 99 per cent. The lessons taught by these experiments at Moscow resulted in the installation of the American system at Moscow, Nizhni, Novgorod, Tzaritzin, Ribinsk, Balashoff, Amarvir, Vladimir, Simbirsk and Tomolsk. In addition to these American filters have been used for manufacturing purposes on a large scale at Kostruma, Yaroslav, Orekhov-Zoujere, Tver and Moscow, and others of this description are now in use by the Russian Government at its navy department in St. Petersburg.—*Thomas E. Heenan, United States Consul at Odessa, Russia.*

High Praise for American Thrashers.

MR. JOHN SAMPSON, editor of the *South American Journal*, in a letter to the *Mark Lane Express*, of London, England, says: "The American traction engine is rapidly ousting the British type in Argentina. It is claimed that it is lighter and can get more easily over the ground, and, in fact, can cross places where the heavier English engine would be stuck. The system of short stroke with rapid revolution is said to be much better for the requirements of the conditions than the older pattern. Many American engines are being sent out with English thrashers. The price of the American engine is also considerably less. It was long an axiom at the River Plata that the English thrashing-machine could hold its own against all rivals. This is no longer the case. American thrashers are daily becoming more in use, and for the simple reason that they are able to do much more work in a given time. An English thrashing-machine will turn out 1,500 to 2,500 bushels of wheat per day and require the services of 18 to 21 men; whereas the American machine will deliver 4,000 to 6,000 bushels and only require the aid of 8 to 10 men. In a country where harvest hands are scarce and highly paid—as much as \$1.44 per day with food—this is important."

Agricultural Machinery Needed in Egypt.

EGYPT offers a valuable field for American agricultural manufacturers. The country is greatly increasing its production of cotton and corn, and when these are harvested the soil is again cultivated for the growing of wheat, barley, clover, etc. To do this properly, Egypt has found it necessary to have various kinds of farm machinery, which, however, must be imported. In 1903 the imports of steam engines amounted to \$441,000; steam boilers and steam-machine parts, \$545,000, and other machinery and machine parts, \$720,000.

Joseph J. Langer, the United States Consul at Solingen, Germany, reports that German manufacturers, to successfully introduce motors into Egypt, are endeavoring to post themselves as to the real requirements. They desire to be reasonable in price and terms of payment and to furnish a machine that is durable, but still simple enough to need no skilled mechanic to operate it, so that the native laborer can handle it successfully.

New Field for American Plows.—The Governor-General of Algeria has recently issued a circular advising the natives to discard the antiquated plows, now generally used, in favor of modern implements. Of the 2,800,000 hectares in Algeria devoted to the growing of corn, more than 2,300,000 are cultivated by natives. If, therefore, the Governor-General's suggestions are adopted—and it is proposed to allocate grants of money for the purchase of suitable implements—there will be a good opening for American plows in that part of the world.

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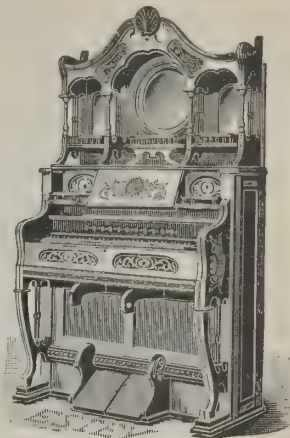
None but the most skilled workmen and the best of material are employed in the making of the **Estey Organs and Pianos**. Prices quoted F. O. B. cars at New York City. Specify "Estey," and when ordering, to avoid errors, please mail us a duplicate of order.

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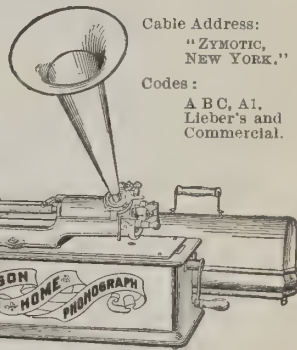
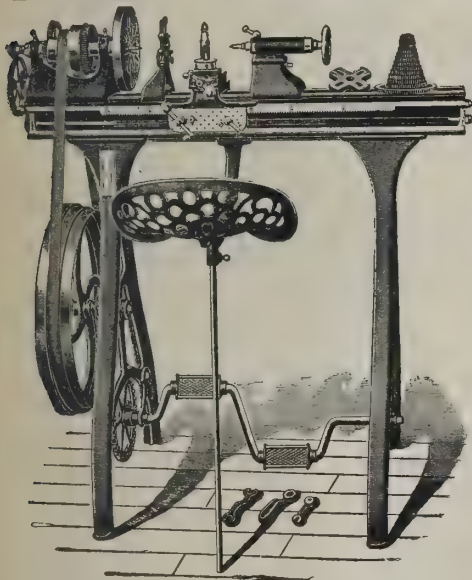
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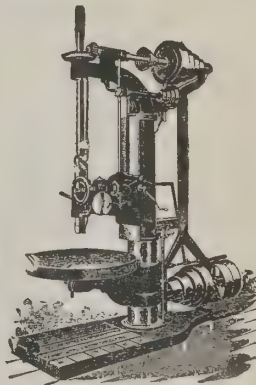
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Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with **New Jersey Copper Paint**, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where **New Jersey Copper Paint** was applied—it is in splendid condition.

A PAINT THAT PROTECTS.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.
MILLS EDWARD, Master Schooner "Florence Shay."

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Makes and burns its own gas. It is portable; hang or set it anywhere. Requires no pipes, wires or gas machine.

A Safe, Pure White, Powerful, Steady Light. Permitted by Fire Insurance Underwriters.

No wicks to trim; no smoke or smell.

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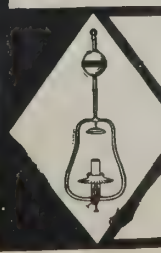
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German Editor's View of New York City.

A GREAT many European journalists and authors have come to the United States this year on account of the St. Louis Exposition, in order to study American institutions and conditions, and the letters containing their critical remarks and observations, as found in foreign papers, offer highly interesting reading for Americans. H. von Kupfer, editor-in-chief of the Berliner *Lokalanzeiger*, says:

"New York is full of noises, but not at all noisy. That may be considered a paradox. However, any one who has witnessed New York life must consider that remark justified. It is like the commotion of an ants' hill, the humming of swarming bees. The noises in the Paris and London streets are greater. In addition to that, the thundering noises made by the elevated trains crossing the city in parallel lines seem to be, as it were, absorbed by the countless electrical surface railroads. The continuous noises may be responsible for that part of its impression upon the hearing, it being lost, but as far as the effects upon the nerves are concerned, I'll leave that question undecided.

"New York, however, since I have seen the city—eleven years ago—has entered a period of progress that cannot be described. There are those 'skyscrapers,' unesthetic products of despair over the tremendous real estate values, and the subway railroad, although nearing its completion, transforming the city into a chaotic condition that, in some places, must be considered as endangering life.

"As far as the building operations are concerned, much has been changed. Much beautifying of the city has been done, but 'progress' as to the monstrous and gigantic dimensions of buildings is especially astonishing, and the average sale of real estate during one week, amounting to \$10,000,000, may give an idea of New York building activity.

"It would, however, be unfair to judge the city's development from that alone. In conversation with people who ought to know, as from personal observations, I learned that municipal affairs have been more developed, which must be considered the more important because the 'unlucky political office-seeking' is responsible for making difficult any progress in matters of public welfare. The 'boss' of a political party secures for his friends and constituents 'fat sinecures' without regarding the capability or incapability of the men selected to work for the public. Under these circumstances it is highly instructive for us to know that the leading city of North America is about to enter into competition with the Old World in what heretofore always has been our special pride—i. e., the best development of hygienic conditions for a great city, as well as the public safety and other things that were not what they should have been in former years."

Accuracy of Our Large American Rifles.

THE "fire control" in the United States coast fortifications is in the hands of a mathematician in an observatory. An officer in the observatory makes a calculation of the distance of the ship to be hit, its rate of movement, the force of the wind, curve of flight of the projectile and the time occupied in raising the gun. He then, by telautograph, gives the gunners the direction and proper elevation in which the shot is to be fired. The points of the compass with fractions of degrees are marked on the circle upon which the rear wheels of the gun-carriage travels. The gunners do not see the target; the gun is raised by machinery above the bank behind which it is hidden, fired and returned by its recoil, an air-cushion easing the jar.

At Fort Barancas, Pensacola, on the Atlantic coast, three shots from a 12-inch gun were fired in as many minutes at a small scow 2½ miles away and moving at the rate of five miles an hour. The mark was hit each time. Being divided into watertight compartments it floated until struck by the third shot.

United States Will Try Turbines.—The American Navy Department has determined to equip two of the new scout ships ordered by the last Congress with different types of turbine engines, and one with the old reciprocating type, in order to experiment with the different turbines and to compare the merits of the new and old style driving powers. One of the ships will be equipped with the type of turbine engine built by the Parsons Company, a firm controlled by the Westinghouse Electric Company, and another with a turbine engine constructed by the Curtis Company, of New York. The third scout will be equipped with engines of the reciprocating type designed by the Bureau of Steam Engineering of the Navy Department.

Agriculture in Abyssinia.—This country ought to prove a good field for the exploitation of American agricultural implements. United States Commissioner Skinner, regarding whose mission into the country we have given some account in previous issues, says regarding the region: "The climate of Abyssinia is so varied that the soil is necessarily adapted to almost every form of agriculture. In regions where there is plenty of water the summers are so long that in certain localities the planting and harvesting of crops take place simultaneously. In most regions two crops are gathered annually, and frequently three."

American Furniture in Belgium.—But very little machine-made furniture is sold in Liege, and while at Maline some small factories are engaged in manufacturing this article it is of the crude and ordinary kind and in no sense does it compare with the machine-made specimens of American manufacture, either in rich appearance or quality.—James C. McNally, Consul, Liege, Belgium.

Farm Wonders of Our State of Oregon.

SOME of the products of the States in the Pacific Northwest section of the United States show such remarkable development that it may be called the agricultural wonderland of the North American continent. An eminent authority tells how a farmer in the Hood River country, in the State of Oregon, raised on four acres 800 bushels of potatoes that nearly all ran from three to eight pounds apiece. There was not one in the lot that weighed less than a pound. Squashes weighing as much as a large man, pumpkins tipping the scale at the hundred-weight, watermelons larger than the Southern pickaninnies, whose eyes would bulge at seeing them, turnips larger than one's head, pears and apples with a circumference of half a yard, are to be seen at the annual fairs of Salem and The Dalles.

The biggest apples, the biggest pears and the biggest cherries at the Chicago Exposition were from Oregon, and the charge cannot be made against them that what they gain in size they lose in flavor. The Pomological Society, which is the highest authority on fruits in the country, awarded to the State of Oregon the Wilder medal for the horticultural exhibit at the Pan-American Exposition, and Oregon expects to win similar honors at the St. Louis Exposition now in progress. The State stands first in the production of hops, raising about one-third of the country's total production.

So far as is known there is no spot on earth, with the exception of eastern Oregon and Washington and the adjoining valleys of Idaho, where three or four crops of wheat may be harvested from one sowing. Yet, since the first settlement of the country, these "volunteer" crops have been reaped. A second crop from a single seeding is officially reported to have yielded thirty bushels to the acre.

An Era of Big American Locomotives.

THE advent of the "biggest locomotive in the world" is so frequent of late that chronicling its arrival has become monotonous. Now it is a Baldwin, for a Western road, which weighs, with tender, nearly half a million pounds. The railroad has provided extra heavy rails for this type of locomotive, and will install seventy of them in its freight department. The first twenty-five are to be equipped for soft coal and the rest for oil fuel. Again, it is the American Locomotive Works which has under way the building of the largest locomotive in the world. It is to be of the Mallet articulated type, will weigh 465,000 pounds when completed, which is 207½ tons, and is intended for freight work on the Baltimore & Ohio Railroad. The machine will be of the tandem-compound style, with a peculiar arrangement for driving wheels and cylinders. It is being built as an experiment, and is intended for use as a helper on the mountain divisions of the road. The heaviest engine now in use on the Baltimore & Ohio Railroad weighs 162½ tons. The new locomotive will have 320,000 pounds on the drivers, a tender weighing 143,000 pounds, with coal capacity of 13 tons and a water capacity of 7,000 gallons.

"England and Us."—The Newark (U. S. A.) *Advertiser* says: "Peace hath her victories,' etc. An American concern—a Jersey one at that—which is putting in gas furnaces in the London mint, has received a contract for the installation of others in the Woolwich arsenal. Just a few generations since the weapons of the two were turned against one another in mortal strife, and now we are sending the mother country apparatus and the real 'sinews of war,' the coin of the realm! We have long been sending 'coals to Newcastle' and shiploads of the 'roast beef of Old England' in life fattened on the cattle ranges of our Western plains. We raise the grain for the 'mother country's' daily bread. What would she do without us? What against us? Carnegie has just been telling the Britons the fix they would be in in case of Uncle Sam's active enmity. It looks as though they didn't have to be told."

American Motor Cars in Scotland.—Some types of American cars, both medium and light weight, are selling well and give satisfaction. They seem to meet perfectly the requirements of the trade, and it has been a subject of comment that so few American makes of cars were seen at the Edinburgh show this year. Such opportunities for advertising a specialty of this kind come so seldom that not one should be neglected by any motor car company or firm seeking foreign trade.—Rufus Fleming, United States Consul at Edinburgh.

Strength.—Some American-made woodworking tools may be too light, just as some European tools are certainly heavier than necessary. Strength where needed is the thing.—*Woodworker*. American tools invariably combine both the qualities of lightness and strength, except when weight is absolutely necessary.

Opening for American Furniture in England.—If American furniture were placed on the market here, where English made—old style and heavy—is in use, and properly pushed, I think a profitable trade could be built up. Furniture can be exported from the United States to Hull at reasonable rates.—Walter C. Hamm, Consul, Hull, England.

Powerful Searchlight.—The most powerful searchlight in the world is at the St. Louis Exposition. It weighs nearly four tons, is of 5,250,000-candle-power and projects a beam of light seven feet in diameter.

HAVE YOU SEEN THE

**Schroeder
Rotary
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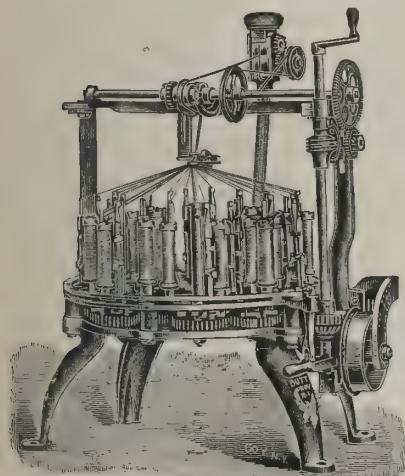
It is the most perfect and successful Rotary Washer on the market. The tub is made of red Louisiana cypress, which will not fall apart. All castings are finished with rust-proof aluminum paint; all iron parts coming in contact with the clothes are heavily galvanized. We also make other washers. For particulars address

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All Breaks Made Good.

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Net spot cash;

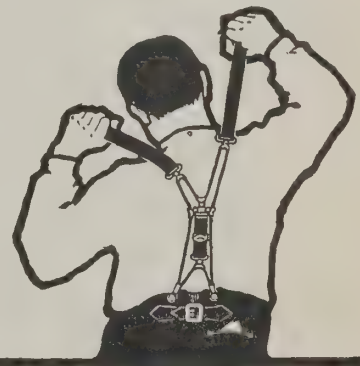
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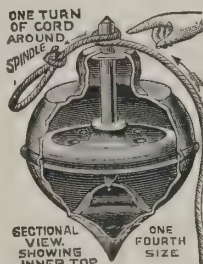
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Is invaluable for making delicate salads, garnishings, etc. Makes **Juliennes** ten times as fast as by the ordinary method and is the only utensil that will produce **Lattice Potatoes**. Is extremely simple to operate and sells rapidly wherever shown.

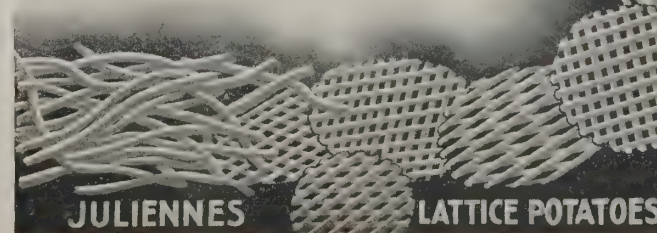
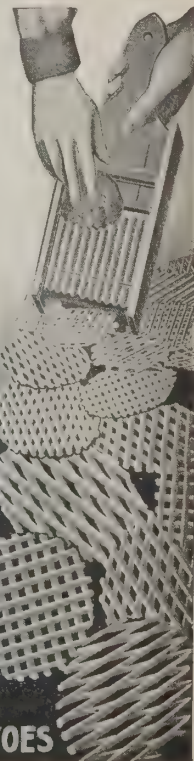
\$16.50 Upon receipt of **SIXTEEN and 50-100 DOLLARS** in U. S. Gold or its equivalent, we will deliver boxed, ready for steamer, F. O. B. cars New York, one gross [144] **No. 6 X SLICERS**, for Export only. Weight boxed, 120 lbs.

NOTE.—To facilitate our rapidly increasing export trade we desire to arrange with one responsible business house in each trade center of the world, to handle our NO. 6 X SLICERS and other specialties manufactured by us.

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How Great Electric Companies Train Their Men.

TO supply the needs of a business requiring technical and scientific knowledge is a great and serious problem, considering the competition and the progress that must be faced continually, says a writer in the *American Inventor*. Business is a warfare that never lets up. It fights on to conquer or surrender perhaps in time to new conditions or circumstances, but fights on even then under a new flag, and the army must be recruited.

Engineering schools may turn out electrical graduates to the number of 2,000 per year, and each one may have a knowledge of strength of materials, hydraulics, steam engineering, French, German, Calculus and Quaternions, physics, dynamo electricity, three years of draughting and designing and four years of laboratory work and college machine workshop, but the moment he sets foot in an electrical factory or power-house he finds he knows nothing well enough to be as good as a regular hand.

Time will ripen him, but he is green. He doesn't know a polyphase motor from a turbo generator, and if he were told to set up such a piece of machinery and start it going he would have to look up for days weights and dimensions that he might know how to lift and set them into position. The great American companies of the present start out with the idea of teaching men how to take hold of work, to get their hands soiled, to go after a task like a dog goes after a rat. One company which the writer has in mind selects from the promising graduates of each year enough to constitute 200 students who pursue courses running two, three and four years in the business.

The two-year students are technical graduates from various institutions throughout the world, while the three and four year students are men of aptitude, but no special training for the business further than common school or general courses. Men of the two-year class (in which at present there are no vacancies) serve sixteen months in the various departments devoted to the different kinds of electrical apparatus manufactured by the company.

Starting in the winding department, for instance, these men are given a check number as a regular man and taught to wind coils for insulates and finish copper wire coils for transformers, armatures and field windings, being required to stand the same discipline as the regular hands, to work the same hours, and, in some cases, to get out the same amount of work. From winding, with the knowledge of all the fine points required, as well as that of winding-machines, tools, methods of best handling wire, cutting, joining, tapping, tying and arranging, the student goes to the insulation of coils, the assembling of transformers, building of iron around the coils, connecting of transformer coils, casing and general finishing.

It is possible that the student will go into the department constructing large machines. Here he will take a hammer and chisel, and laboriously chip burrs from large castings, cut dynamo-pole faces and smooth ugly parts of castings or nicks left by the molds of the foundry. Later, with air-drills, he helps to set brush-holders in place, sliding rails for generators, terminal boards, helps to bend and make copper straps for large generators and motors, helps to rope and put coils in position and connect them properly, trim and finish castings faced to go together and to bolt together finished parts.

A month of this will make a student glad perhaps to get into winding, where the intricacies of alternating current, one, two and three phase, open and closed windings, as well as the continuous current windings, will keep him busy for many months. He emerges from this department with a full knowledge of every material used for insulating and working with winding, as well as valuable ideas about the hauling of great weights with care and precision, and ways of going at each job of winding with great saving of time and material. He also becomes well acquainted with all soldering processes and methods.

The student is then allowed to work at setting up large machines for test. This work is a foretaste of construction work in the installation of electric plants. Passing on to the departments, manufacturing, commutators, controllers, brush-holders, he, in time, enters the department of manufacturing street car motors. Here he follows the same scheme on larger work, helping to finish the machine motor cases, place the field coils in and connect them up, insert the plate and other necessary features, principally the armatures, bolts up the top and bottom and thus sends the finished machine up to the testing-room to be tested. Further work in this department ends with the commutator, the soldering of the armature, commutator turning. He is kept in this department for two months. From this department he is perhaps transferred to the manufacturing from bar and plate copper switches and circuit-breakers and from various materials, rheostats, switchboards, oil switches, armeters, voltmeters, ammeters, and indicating recording instruments of all kinds, together with a world of small parts.

A year has more than elapsed before the student has mastered the processes and drawings of the various machines seen. By this time he has become somewhat familiar with the technics of the business and is allowed to serve for a time as assistant to some of the eminent engineers in the designing offices, who there have a chance to size him up as a future co-worker. Other office experience presents itself to the student in engineering, accounting, construction departments and a thorough knowledge of and intimate practical work with opportunities is afforded in one of the several testing departments. This has taken up altogether a year or so, when the student becomes available material for the sales, construction, engineering, correspondence, draughting and executive departments.

Against such a campaign of education it is hard to see where any gap has been left open for weakness in the crucial test of competition. With capable men to step into the shoes of rising officials, a system is arranged for a con-

tinuation of authority that cannot but keep fresh for business struggles against smaller concerns depending on chance to secure brains and energy—concerns that take raw material and make finished, useful products of them which fulfil the guarantees, sell, stay sold and produce a market for more of the same kind.

Electrically Lighted Dials for Watches.

IN old verge watches dials were enameled and the twelve hours in relief enabled blind persons to ascertain the time by feeling with the finger. Now electricity comes in its turn as a means of lighting the dials of watches of twenty-four to thirty lines, called carriage watches.

The following is the system, as described in the *Jewelers' Circular-Weekly*: The dial is, ordinarily, of metal or enamel. An oval depression is cut on the lower part of the figure XII and omitted in the upper part. In this hollow is a minute incandescent lamp, a small hollow glass bulb with a platinum wire inside, which lights the whole surface of the dial. The glass is cut on each side of the pendant for conducting wires coming from a dry battery, placed under the seat of the carriage. For an automobile a special battery is not necessary, since this vehicle carries in its mechanism a battery for lighting which will furnish when wanted the electricity for lighting the dial throughout.

To a pocket watch whose dial shall also be lighted by means of electricity there is but a single step. Indeed, it will be sufficient to connect the two conducting wires with the two poles of a dry battery carried in a pocket of the wearer. In order to make sure of the duration of the energy of the battery, a contact button should be installed in the case of the watch, so as not to close the circuit—that is, not to make use of the battery except at the precise moment of ascertaining the time.

The principle of this system is not new, for luminous jewels have been in existence for a number of years and have played their part in a successful piece as theatrical novelties.

New Devices to Print Without Types.

PRINTING without types is one of the latest innovations that American inventors have been at work perfecting, and there are three companies in New York City that are about to put on the market devices for that purpose. One is capitalized at \$10,000,000. The process is as simple as a, b, c. To begin with, a typewriter with the standard keyboard is used to "set up" the copy, not in letters, but in perforations in an endless strip of paper. The complete tape looks somewhat like the music used in automats that play the piano. The strip of paper is passed through a machine which prints, with justification, sheet after sheet of matter of the required size—a book page or a newspaper. Impressions of this printed stuff are then made upon aluminum or zinc plates as thin as ordinary sheet iron, which are placed with equal facility upon both the bed-and-platen and the cylinder presses.

One of these typeless machines is called the "planograph" and another the "lithotype." The principle of printing from plates as smooth as glass is this—water and grease won't mix. The text is put on in ink, the basis of which is grease. Enormous pressure is used, the typewritten piece of paper being laid flat upon the zinc plate and pressed under heavy rollers. In printing the ink rollers pass over the entire plate, but leave ink only upon the inked impression, for the rest of the plate—all the spaces between the letters—is covered with water from a water roller, which abhors ink. As many as 164,000 impressions have been taken from one plate.

More American Equipment for London "Tube."—American condensers are to be installed in the huge power house which is being constructed at Chelsea, London, S. W., by the Underground Electric Railways Company, usually referred to as the Yerkes syndicate. The International Steam Pump Company secured the contract, which is valued at \$125,000. The British Westinghouse Electric and Manufacturing Company, Limited, secured the contract for the electrical equipment, which will represent an expenditure of fully \$3,000,000.

New Electric Plant Contemplated.—South African advices state that a company is in process of formation in Johannesburg for the purpose of erecting a central station to furnish electric power to the mines and also to supply such demands for public light and power as are not met by the corporation's own scheme. The existing equipment of most of the mines in the district is of very obsolete and nondescript type. Here is an opportunity for American enterprise.

American Electric Instruments for Scotland.—The General Electric interests have secured a contract from the Glasgow Corporation for six large high-tension transformers for installation in the Port Dundas plant of the electric traction system in that Scotch city. They have also taken a contract for several cars for the Keighley Corporation tramways.

American Equipment for South Africa.—The General Electric Power Company, Limited, of Germiston, South Africa, is to considerably extend its plant. The existing equipment comprises Curtis turbines and Stirling boilers. More American equipment will be ordered. The company is to extend its power service to the mines in the vicinity.

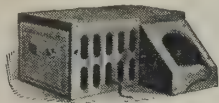
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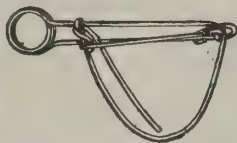
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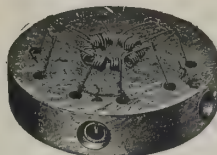
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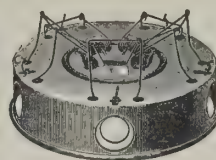
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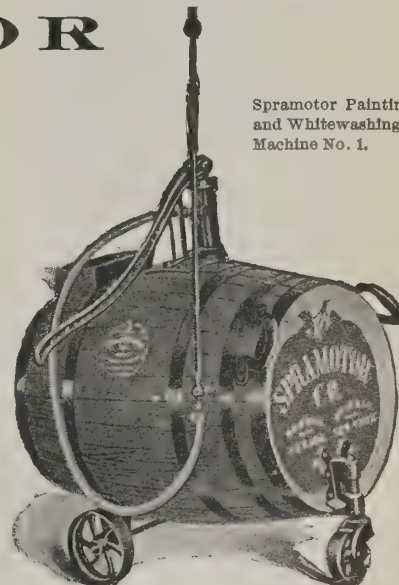
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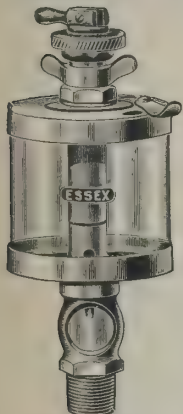


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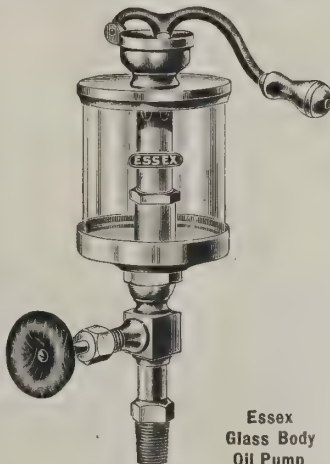
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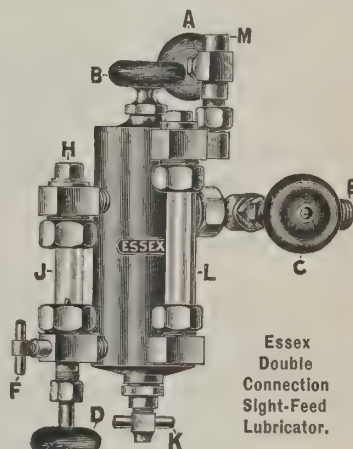
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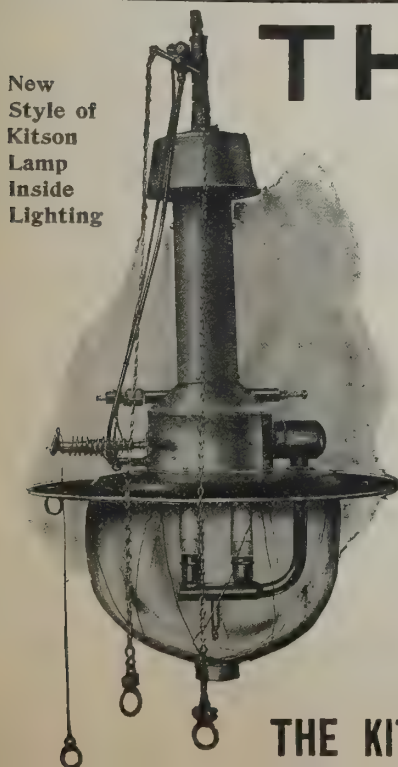
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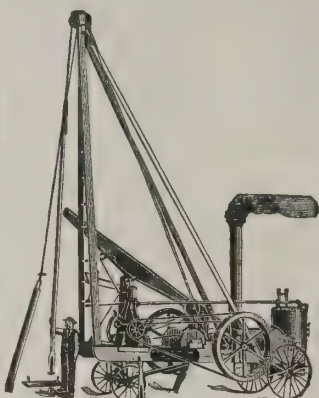
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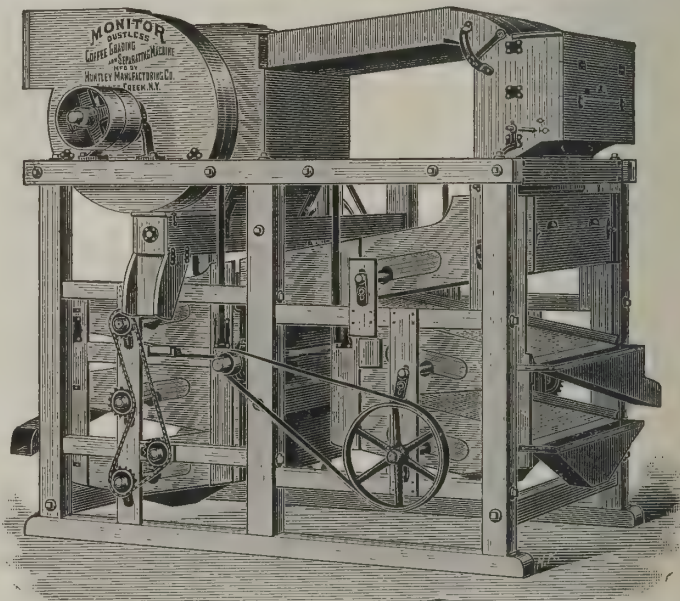
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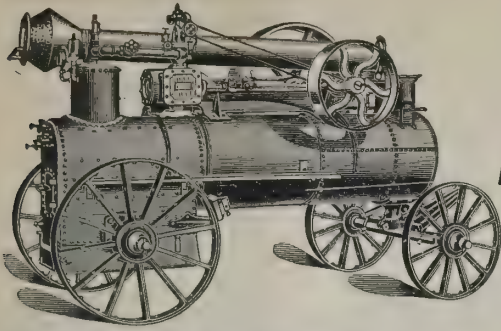
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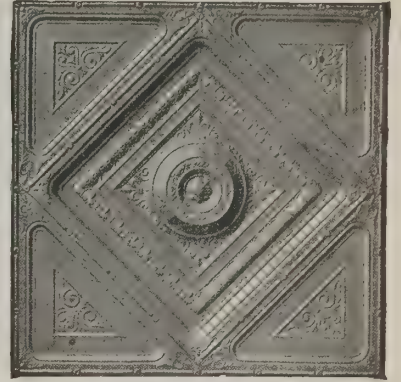
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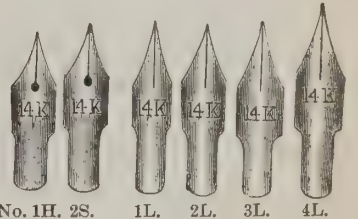
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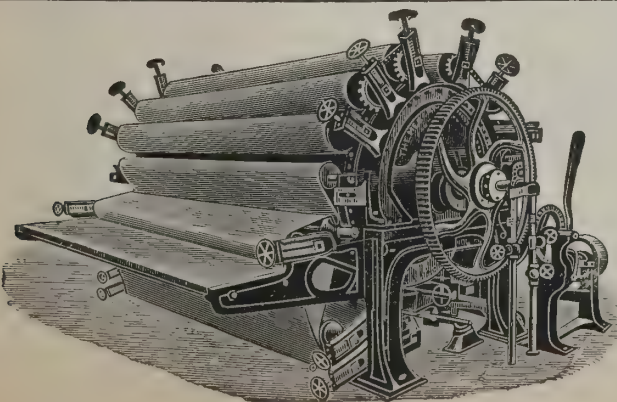
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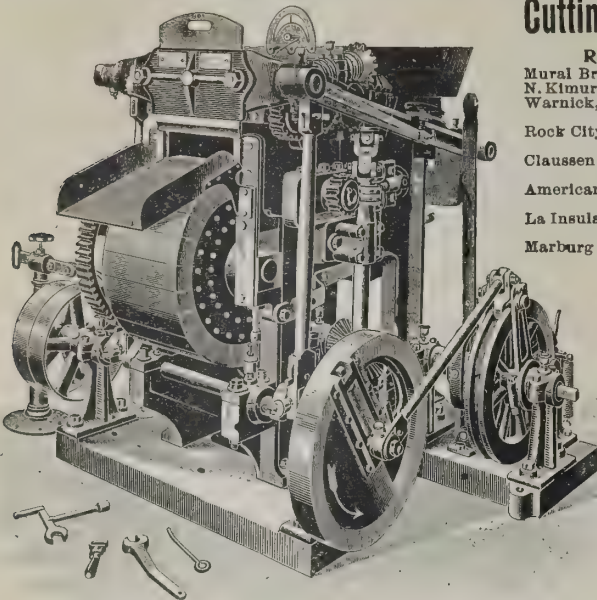
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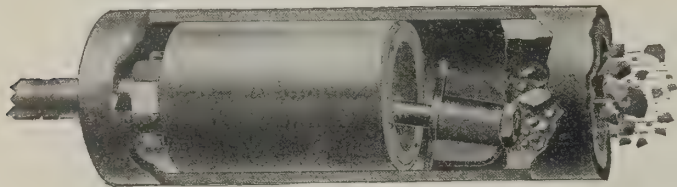
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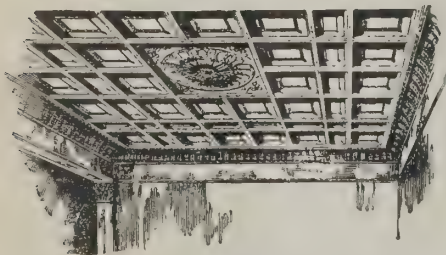
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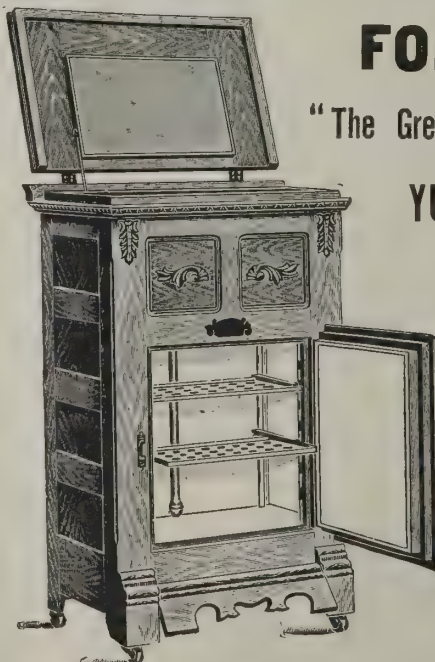
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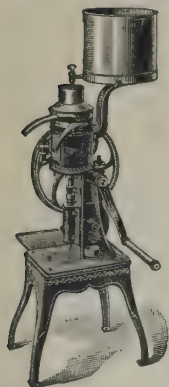
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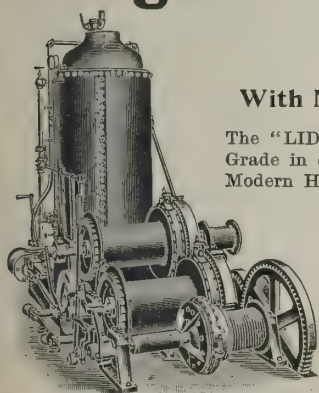
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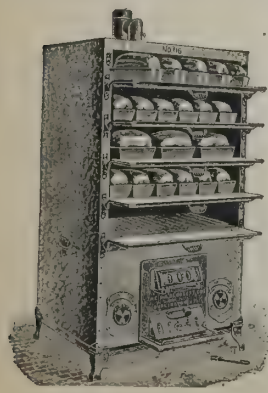
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Machine moulded and cut gearing.

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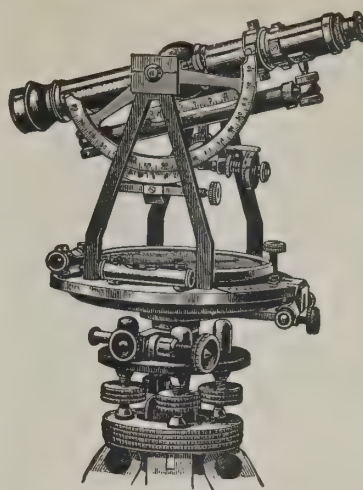
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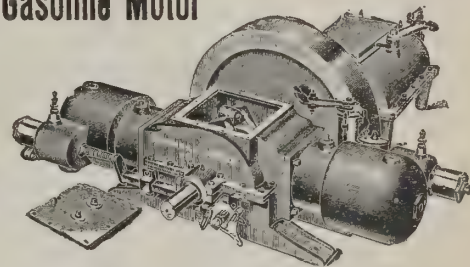
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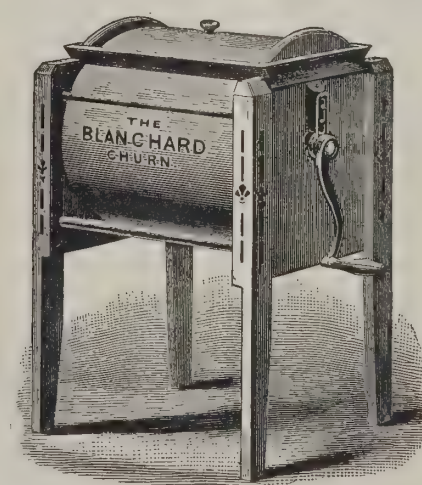
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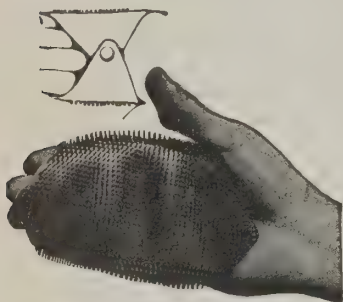
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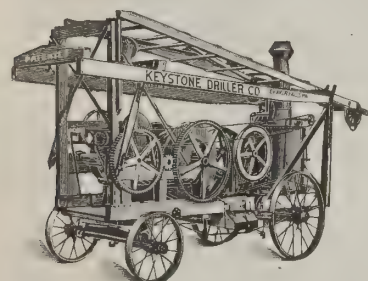
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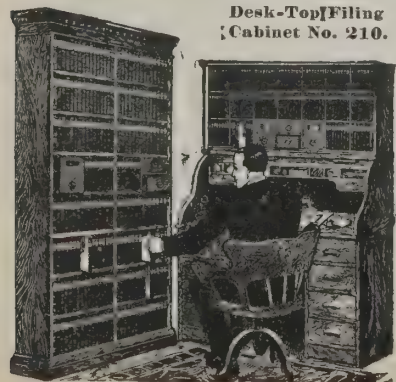
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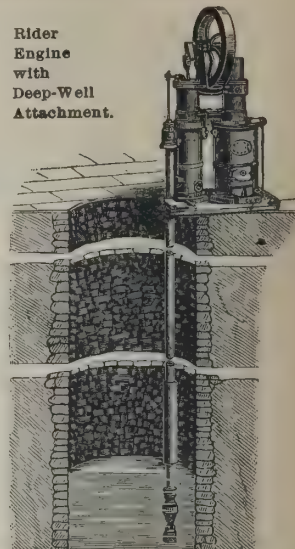
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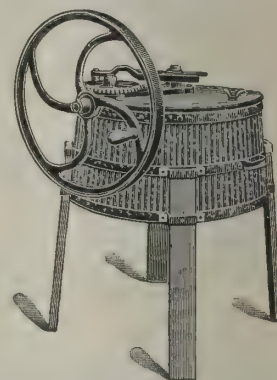
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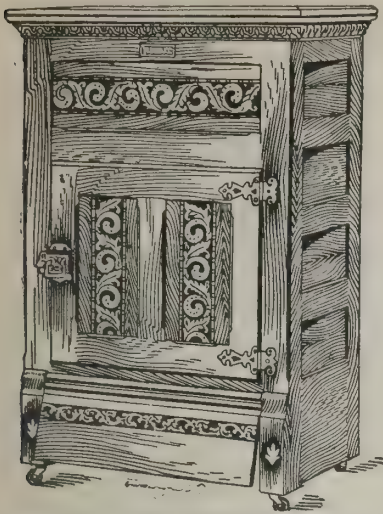
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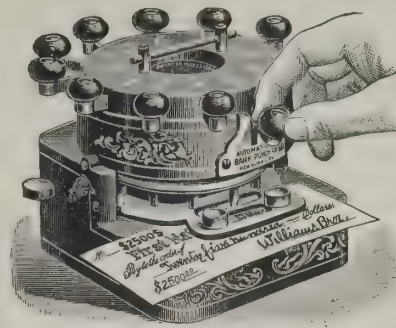
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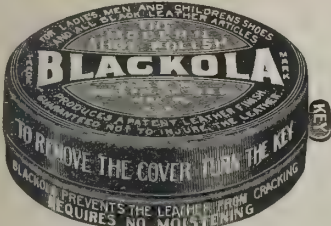
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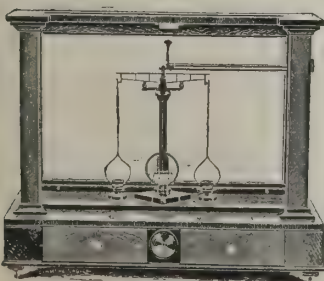
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 \$27.00 per dozen.
 Nickel-Plated, Highly Polished 60-Candlepower Lamp. This Lamp is furnished with patent lift attachment on chimney gallery and smokeless and odorless flame spreader, with fountain indicator of amount of oil in Lamp at all times.

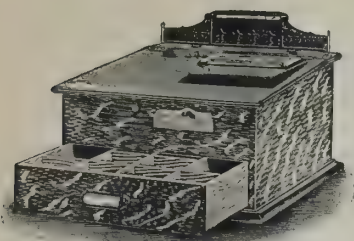
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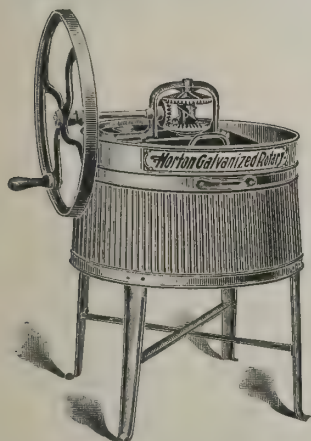
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Will not rust or rot, and not affected by climatic changes.

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Each washer measures, crated, 8 cubic feet. Each washer weighs, crated, 80 lbs.

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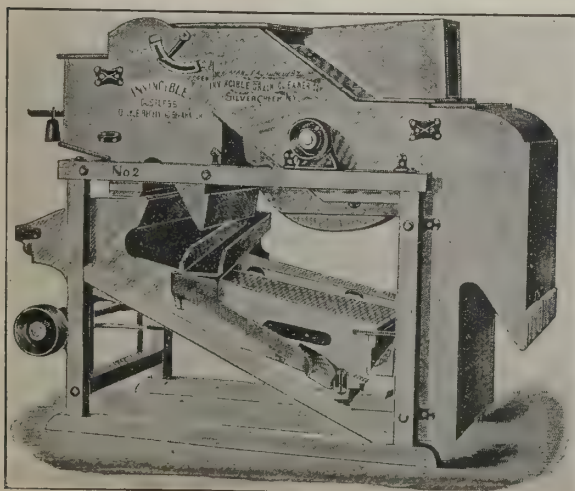
Manufacturers and Exporters of

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Manufactured by
The Invincible Grain Cleaner Co.
Silver Creek, N. Y.,
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This Separator removes from grain all dust, chaff, straw, sticks, headings, chaff, cockle, smut and all impurities. Built on honor, of best materials and in the most workmanlike manner.

Has automatic feeding arrangement, is efficient and economical. Send for full description and price to above address or to our

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Pierce Well Engineering & Supply Co.

136 Liberty St., NEW YORK, U. S. A.

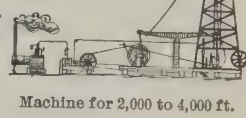
Cable Address, "Artesianos, New York."

Manufacturers of everything required to drill and complete Wells for

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Any depth from 25 to 5,000 feet.

Also Special Tools for Soundings and Test Borings for Water and Mineral Prospecting and Developing Mines; Light, Portable



Machine for 2,000 to 4,000 ft.

Outfits operated by Man Power. We furnish Pipes, Casing, Sucker Rods, Tubing, Fishing

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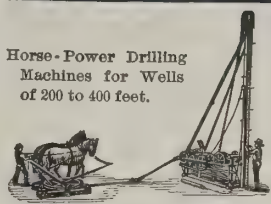
Complete Machines and Experienced Men sent to any Country or Climate. We have the largest and most varied experience of any firm in this business in America.

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Horse-Power Drilling Machines for Wells of 200 to 400 feet.



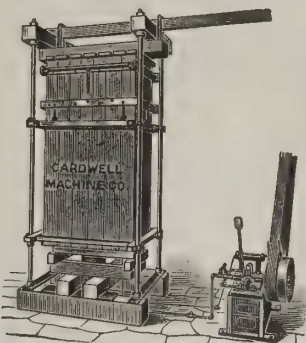
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Simple, compact and very powerful; worked by either hand or steam power; not liable to get out of order and very durable; they are the best baling presses made.

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COTTON SEED OIL MILLS. We make various sizes, of capacity from 5 to 150 tons of seed per day. Our mills embrace all the modern improvements, and will give the best results. We will erect and complete, guaranteeing capacity.

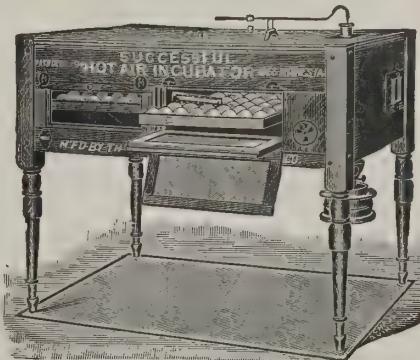
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THE BEST THAT SCIENCE AND MONEY CAN PRODUCE.

The "SUCCESSFUL"



is regarded by those who have made money out of poultry raising as the greatest egg-hatching machine of the day. Heat, moisture and ventilation controlled automatically. Hatches well in the hottest and driest climates of the world. The walls of our machines are built on the refrigerator plan and packed with mineral wool asbestos. Sizes from 54 to 400 eggs. Prices from \$10 to \$37. Both hot-air and hot-water heating systems used. All hot water tanks made of 14-oz. planished copper.

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PATCH'S PATENT "Black Hawk" Corn Sheller and Separator.

14th Year of Success.

BEST Hand Sheller ever made. Original, Honest, Durable. Shells rapidly; takes every grain off the cob. Easy to use and always ready.

WILL LAST A LIFETIME.

Weight, 15 lbs. Capacity, 8 to 14 bushels per hour. Largely of Malleable Iron. All bearings chilled. Attached to any box instantly by Clamps.

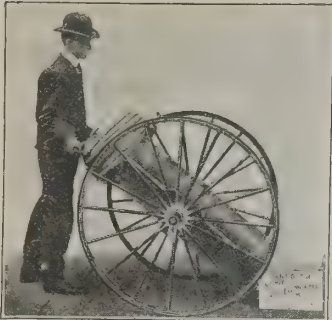
SPECIAL EXPORT PACKAGES. Order direct or through any reliable Export Commission House.

Beware of Imitations. Insist on having Patch's Patent "Black Hawk" Corn Sheller. All others are Frauds.

A. H. PATCH, Patentee and Sole Maker, **Clarksville, Tenn., U. S. A.**



HIGH-GRADE FIRE APPARATUSES.



**FIRE EXTINGUISHERS,
CHEMICAL ENGINES,
TRUCKS,**

**For Storehouses, Homes,
Factories, Establishments
or Fire Departments.**

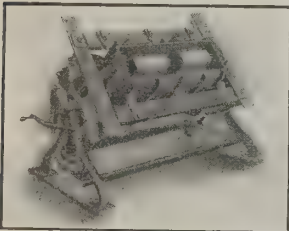


Please pay us a visit when you come
to the Exposition in 1904.

When the apparatus is loaded it will throw a
stream of gas (which gas is the best fire extin-
guisher) at the distance of 50 feet. Any woman or
child can operate it as well as an expert man. It
is always charged and ready for use, but it has no

pressure until the moment of using. It can be used every day, lasting a lifetime.
Once discharged or used it can be charged again in one minute.

STEMPEL FIRE EXTINGUISHER MFG. CO., St. Louis, Mo., U. S. A.



Machine showing rocked position.

**The WINGET CONCRETE MACHINE CO.
COLUMBUS, OHIO, U. S. A.,**
MANUFACTURERS OF

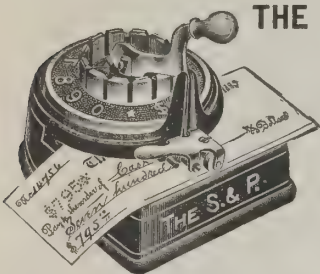
The Winget Concrete Building Block Machine,

Automatic, adjustable and rocking. To admit the facing of
blocks. Combining ten machines in one, for the manufacture
of concrete blocks for dwellings, factories, bridges, power
plants, docks, retaining walls, tunnels, subways, silos, founda-
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SEND FOR OUR NEW CATALOGUE.

In order to facilitate our increasing export business, we
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We are erecting a building of our Concrete Blocks at the St. Louis World's Fair.
It is located just east of the Press Building and the Wireless Telegraph Steel Tower,
and north of the Liberal Arts Building. The public are invited to inspect the building.
One of our machines will be shown in operation there.



THE S. & P. CHECK PUNCH

AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.

ANY SIGN may
be had in place of
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Net Weight 3 1/4 pounds.

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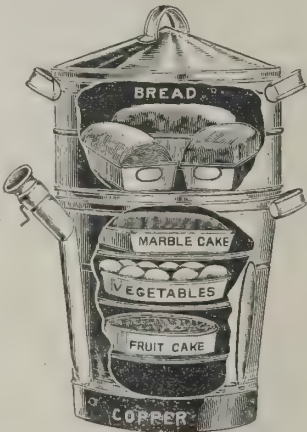
BEST AND CHEAPEST.

Cuts fancy edge on silk or cloth. Will cut Chamoms Leather, Kid,
Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thick-
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ful in every household. Will fit any table. Agents wanted in every
country. Order through New York commission houses, sending us
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"IDEAL" Steam Cookers

FREE Book of 36 pages, printed in colors;
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there is to know about steam cookers—round
or square. The 1904 models of "Ideal" Steam
Cookers are entirely new in principle, design
and special features. The
only steam cookers made in
which both round and
square have whistles to
call the cook when water is
needed. Seamless copper
tank bottoms.
Cooks a whole meal
over one burner, on
gasoline, oil, gas or
common cook stove.
Reduces fuel bills one-
half. Agents wanted.



We Want Foreign Agents, and to get them quickly, we are making the
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No. 20, Sq. Copper Tank
Retails \$6.50 Each.
13-gallon food capacity. 12
Cookers in a box. Measure-
ments and weights of boxes
holding 12:
Gross weight, 210 lbs.
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Retails \$5.00
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These are our best sell-
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steamer. Order direct
orthroughexport house;
in latter case, mail du-
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avoid errors.

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as a bed.

FOR FOREIGN MARKETS ONLY.

Upon receipt of \$45 (U. S. gold) we will
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Beds. Each bed weighs 120 lbs. net; pack-
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latter, specify "The Favorite," and
please send us duplicate of order.

Battle Creek Iron Bed Co., Ltd.,
BATTLE CREEK, MICH., U. S. A.

is the latest creation in folding beds and
can be easily opened or closed by a child
of five years of age. Opened ready for
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being 6 feet long by 4 feet 6 inches wide.
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back position, as shown.



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as a "Davenport."
Reclining-Back Position.

Mack's Delicious Soda-Water Powders.

Made by Simply Adding to a Glass of Water.

All Flavors. Packed in Small Wooden Boxes. Retail at 1 Cent Each.

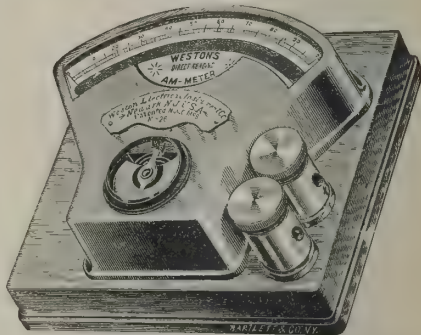
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**Voltmeters,
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Not equalled by any other tools made in America. None better made anywhere in the world
Specified in United States Government requisitions. Send for Catalogue.

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OKOLITE.

**An Oily Paste Polish for ALL
Black Leathers, Also**

Brown Okolite

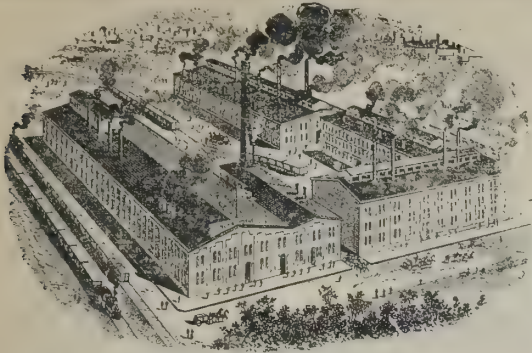
For ALL Russet and Tan Shoes.

We are Manufacturers of over 60 varieties of Shoe Dressings,
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SPECIAL INTRODUCTORY OFFER TO FOREIGN BUYERS:

6 dozen Black Okolite, 3 dozen Brown Okolite, 1 dozen small and 1 dozen large Black
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This entire combination offer in one case for \$12.00 in U. S. currency. Orders executed
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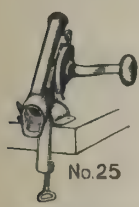


Office: Coffee Exchange, NEW YORK.
Factory: York, Pa. Cable Address: "Adverbial," New York.

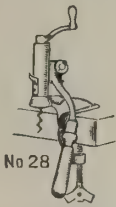
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MANUFACTURERS OF

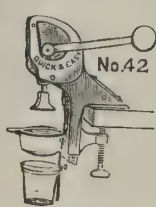
Agricultural Implements & Machinery



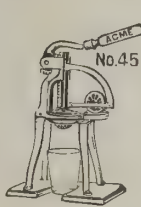
No. 25. Quick and Easy Cork Puller.



No. 28. Samson Cork Puller.



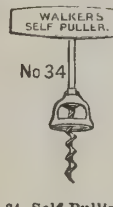
No. 42. Quick and Easy Lemon Squeezer.



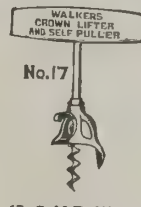
No. 45. Acme Lemon Squeezer.



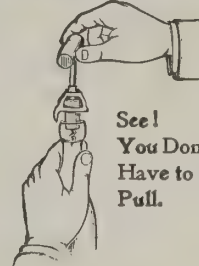
No. 48 1/2. Quick and Easy Shaker.



No. 34. Self-Pulling Cork Screw.



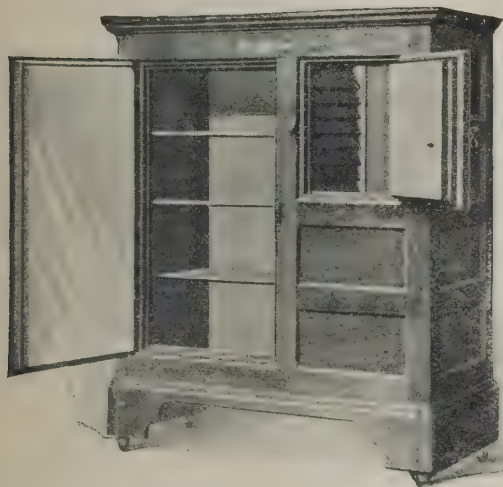
No. 17. Self-Pulling Cork Screw.



No. 48. Imperial Shaker.

Any American Exporter will buy and forward these goods.

ERIE SPECIALTY CO., Erie, Pa., U. S. A., Manufacturers for Export.



No. 2. Style "A," Panel Door.

White Enamel Refrigerator Co.,

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Owners and Manufacturers of

Bohn's Patent Dry Air Syphon System of White Enameled Refrigerators.

The Bohn Dry Air Syphon System insures a low and uniform temperature, ranging from 38 to 48 degrees Fahrenheit. With our Enamel Lining, you need only to wipe the food compartments with a damp cloth to clean perfectly. The only absolutely sanitary refrigerator made.

Adopted and used exclusively by the Pullman Company for all of their Dining and Buffet Cars. Pennsylvania Lines, New York Central, Michigan Southern, Union Pacific, Canadian Pacific and all other railways throughout "the States" and Canada, as well as by thousands of homes, hotels and clubs.

For Foreign Markets Only.

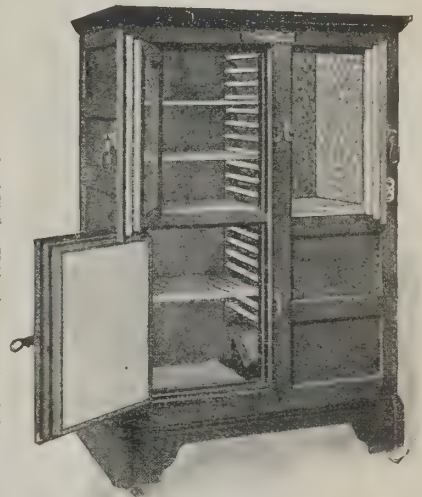
The prices here quoted include boxing ready for transportation and delivered F. O. B. cars at New York City.

No. 2. Style "A," Panel Door. Price, \$23.00. Outside measurements (inches): Width, 38; depth, 21; height, 44. Weight, boxed, 278 pounds.

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NOTE.—Orders received direct, or through export commission houses. When ordering through the latter, to avoid errors, please mail us a duplicate of order.

Our forty-page catalogue, illustrating and describing the various styles of White Enamel Refrigerators made by us, mailed postpaid.



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Inventions for the Deaf.

THE MASSACON

For the Cure of Catarrhal Deafness.

THE ACOUSTICON To Enable the Deaf to Hear.

The manufacturers are pleased to announce that these instruments are now ready for the market. Their success is a matter of scientific history.

The Massacon may be ordered with the assurance that it will CURE deafness resulting from catarrh. Other causes should be made a matter of correspondence.

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Type A—In a very handsome case of quartered oak, mahogany or ebony, as may be desired. Has necessary controlling apparatus for use in connection with electric light, such as may be found in any city or town, and ALSO IN CONNECTION WITH BATTERY, when light circuit is not convenient.

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Price, including battery, f. o. b. New York, weight 4 lbs., - \$50

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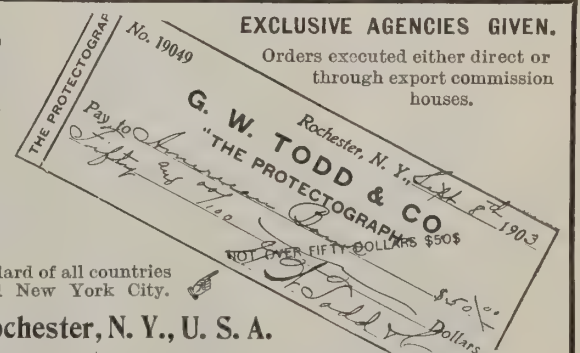
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Are now in daily use by the leading financial, industrial and mercantile institutions of America, and are exclusively employed by the United States Government.

The machine is a marvel of simplicity, being but six inches square and weighing only ten pounds, boxed ready for shipment. One movement of the lever indents the limiting line upon any preferred part of the check (see reduced facsimile of check) and by its system of compound levers forces an especially prepared indelible ink into the fiber of the paper, making it a part of the document itself and rendering its removal impossible.

The Protectograph is made to conform to the monetary standard of all countries and to print in any language. The price is \$30, delivered New York City.

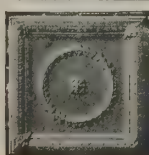
G. W. TODD & CO., Mrs., 40 Trust Bldg., Rochester, N. Y., U. S. A.



Romanesque.



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Art Metal Ceiling

Exclusive and Artistic Designs Appropriate for Any Style of Architecture.

Orders Filled Through Commission Houses. Correspondence Solicited. Write for Catalogs.

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Patent Metal Shingles.
Crimped and Corrugated Iron.
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Architectural Sheet Metal Work, Etc.



sirous of learning how to swim. Weight, 3 ounces. Ayvad Mfg. Co., Hoboken, N. J., U. S. A.

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JOSEPH MEIER'S SONS,

MANUFACTURERS AND EXPORTERS OF
PURE OAK TANNED LEATHER BELTING,
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Orders filled through commission houses.

Correspondence solicited

Catalogue "K" on application.

New York Office:
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NEWARK, N. J., U. S. A.

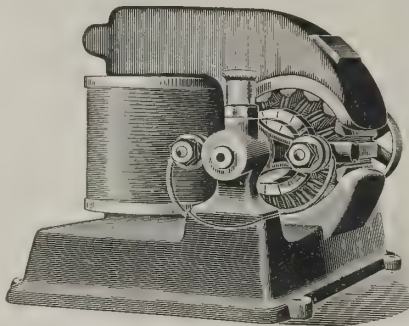
The Type "B" Dynamo or Motor

Price, \$26.50,
F. O. B. New York.

Output: as a Dynamo, 8 lights or 450 watts; for Electro-plating, 6 volts and 50 amperes; as a Motor it will deliver $\frac{1}{2}$ horsepower.

This is a GOOD machine and will give the best of satisfaction. Standard voltage, 110, but can be wound to order for any voltage up to 500, at special prices.

Send for Illustrated Bulletin.



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Rife Hydraulic Engine.

PUMPS WATER BY WATER POWER.

Irrigation with Rife engines.

Does not require any care or expense.

Water supply for towns, railroad tanks, country houses. All engines guaranteed. Catalogue free. Estimate furnished. Engines never stop. Pump water to 30 feet high for each foot of head. 4,000 engines successfully working.

RIE ENGINE CO., 126 Liberty St., New York, U.S.A.

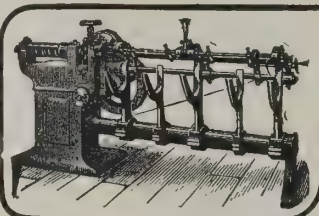


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Button Hooks, Shoe Lifts, Letter Openers, Key Rings, Etc.

Only factory of its kind in the United States. Orders filled through commission houses. Correspondence solicited. Send for Catalogue "A."

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Our Automatic Wire Straightening and Cutting Machine

Straightens and cuts accurately every minute from 60 to 160 feet of wire any desired length, directly from the coil.

If your work requires riveting a number of rivets, or drilling a number of holes, you should send for our Booklet telling of the special labor-saving machines we make.

THE F. B. SHUSTER CO., Formerly John Adt & Son, New Haven, Conn., U.S.A.

"They Sound Different"

BELL BRAND

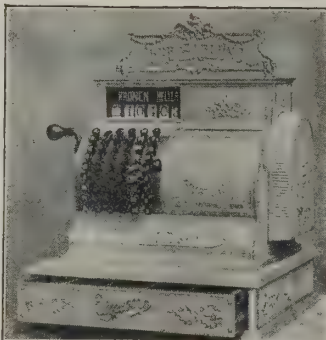
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For Violin, Guitar, Mandolin, Banjo, Harps, Etc.

Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.

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Factories: East Syracuse, N. Y., U.S.A.

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Dessert Spoons, " " "		1.80	0.7.6
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Child Sets (3 pieces), knife, fork, and spoon, packed each set in lined box, 144 boxes in case, per gross sets..... \$8.00 £1.12.0

Tea Spoons, twelve gross, net weight 83 lbs., 36½ kilos; gross weight 90 lbs., 41¼ kilos.

Dessert Spoons, six gross, net weight 64 lbs., 32 kilos; gross weight 70 lbs., 35½ kilos.

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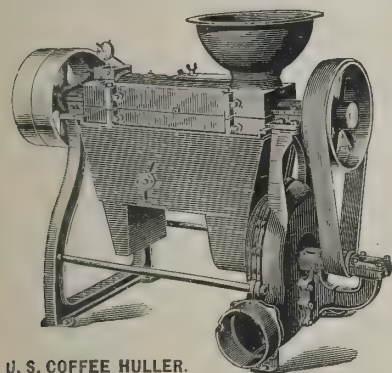
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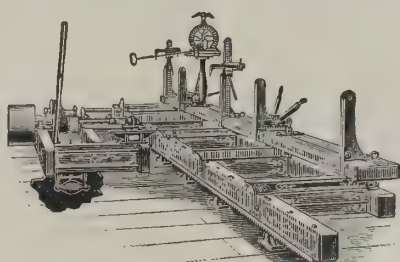
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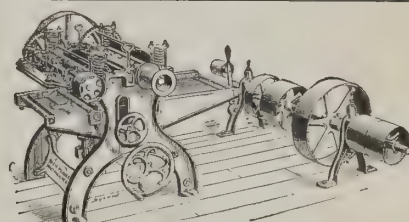
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U. S. COFFEE HULLER.



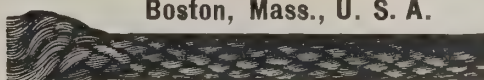
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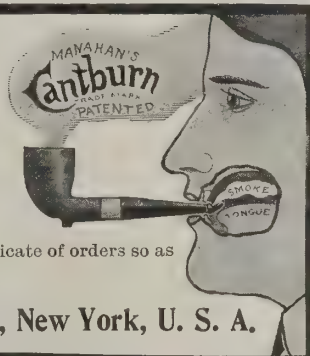
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Saliva can't get into the pipe, become saturated with POISONOUS NICOTINE, leak back into the mouth and give you TOBACCO HEART. No valves, absorbent piths or smoke filters used, to become filthy and spoil the flavor of your smoke, and you can smoke any tobacco.

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Send export orders through buying and shipping agent, and send us duplicate of orders so as to avoid mistakes.

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FRESH AIR LOCK
GIVES PERFECT
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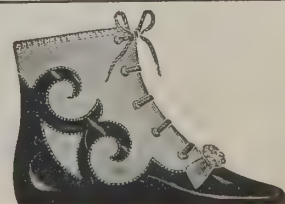
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In which to Read, Rest, Sleep, Write, Study, Sew or Smoke.

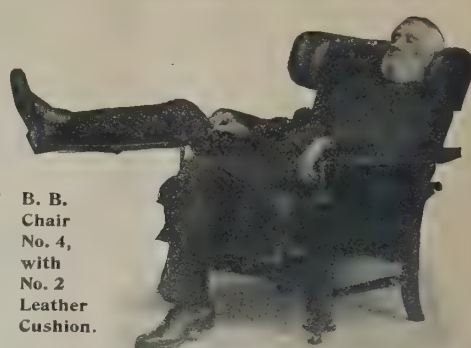
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The Chair here shown is that known as our B. B. No. 4. It is made in weathered oak finish and is leather covered.

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Leather
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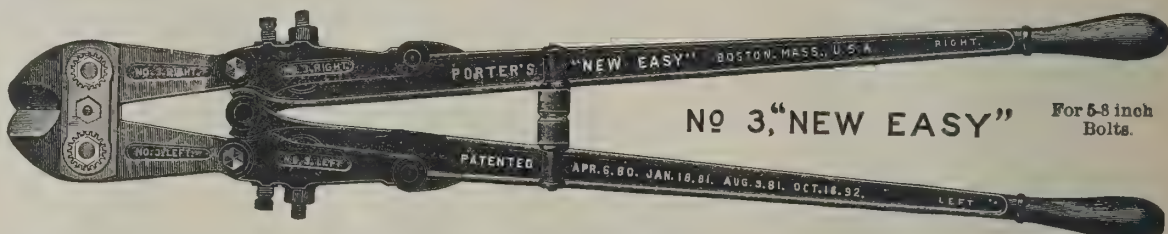
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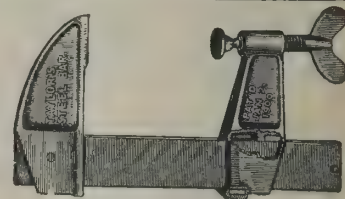
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Stamped Steel Ceilings and Side Walls

Great Varieties of
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We also manufacture Tin Plates, Black and Galvanized Sheets Metal Shingles and Lath and all other Sheet Metal building materials.

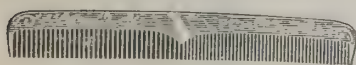
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THE SANITARY COFFEE MAKER.

GOOD COFFEE WITHOUT EGGS OR SACK.

Made of pure finely perforated aluminum.

Will not taint or tarnish. Will fit any Coffee Pot. The quickest seller of any Household Article upon the market, and should be in every house throughout the civilized globe.



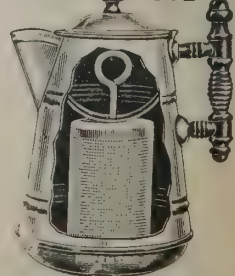
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THE WISCONSIN MFG. CO., Manitowoc, Wis., U. S. A.

OVER HALF A MILLION IN USE THROUGHOUT THE U. S. A.

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Sanitary Coffee Maker within Coffee Pot.

PAUL WOOD SPLIT PULLEYS

are from 40 to 75 per cent. lighter than iron pulleys, and will transmit from 25 to 65 per cent. more power than any iron or steel pulley. The "Paul Pulleys" are the strongest, lightest, handsomest, quickest adjusted and truest running WOOD PULLEYS in the world.

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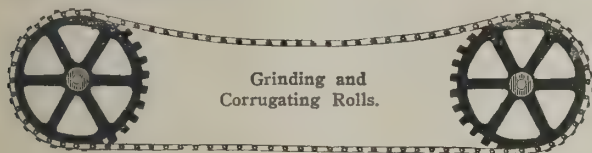


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The Mey Chain Belting Engineering Works,

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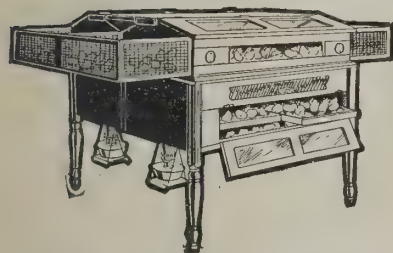


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have trays so constructed that it's easy to reach either eggs or chicks. Remember, too, that the Reliable out-hatches its competitors so often because the heat in corner or center is always the same temperature—a mellow, even heat in every cubic inch of the egg chamber. Our new catalogue is free. It tells a lively story giving warnings, and simple, yet full instructions on hatching and raising poultry successfully. Just send 10 cents to pay postage.

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A SCIENTIFIC WONDER

**200 HOURS' LIGHT
FOR ONE CENT.**

Makes and consumes its own gas, generated from kerosene oil. The only lamp using a glass burner.

**Absolutely Safe and Free
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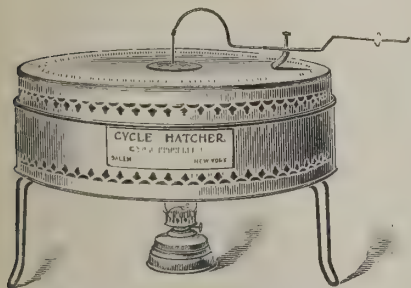


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A HATCHING WONDER

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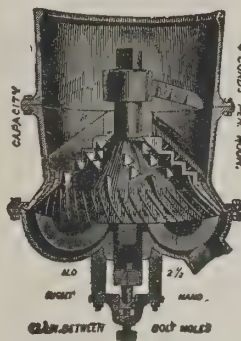


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with Malleable Iron Hubs are mechanically correct in design and construction. No slippage on the shaft. No wide paddle-like arms to fan the air and consume power. Be progressive and use a modern pulley. A half million already in daily use. Live machinery and supply dealers everywhere handle and carry them in stock. Catalog on request.

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will hold more papers than any clip of its size on the market. It has

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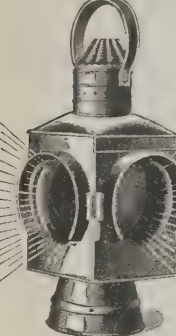
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Manufacturers and Exporters of
The Cady Tack Puller and Tack Hammer Combined.

Is as good and handy a tack hammer as can be made, and the best and handiest tack puller ever offered, all in one simple tool.

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Heavy Tinware for Railroads, Oil Cans of every description. Locomotive Gauge Lights.

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STAMPED STEEL WALL MATCH SAFE

WITH RECEPTACLE FOR BURNT MATCHES.



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Heating and Cooking Stove.

A unique, compact and ornamental gas furnace; will heat an ordinary bedroom in seven minutes at a cost of ¼ cent per hour.




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PECK'S
HATCHETS and AXES.

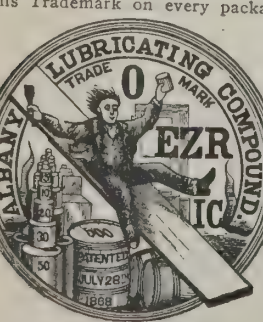
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PECK EDGE TOOL CO.,
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Write for Catalogue and Prices.

Quality Counts. Merit Wins.

There Is Only ONE ALBANY GREASE

This Trademark on every package.



Look out for Yellow Label.

ADAM COOK'S SONS,

And we are the only Makers.

Have you seen Albany Grease? How many know its worth?

Cost of using Oil.

Cost of using Albany Grease.

Albany Grease is the only safe lubricant for electrical machinery of all kinds and is used by all the large plants and every street railway in the U. S. A. Self-acting. Where oil is used we can save you from ¼ to ½ in the cost of lubrication. Oils are advancing and it will pay to use Albany Grease at the present prices. Small 4-oz. sample free on application.

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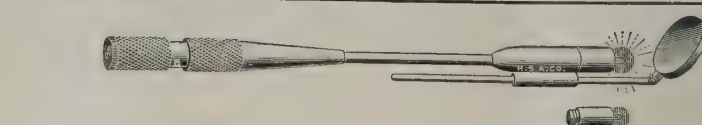
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For High-Speed and Hard-Running Belts.
Orders Filled Through Commission Houses. Correspondence Solicited. Write for Catalogue T.

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With **COLD LAMPS.**
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Fiberlite Shade and Holder.

Shade made from fiber similar to that used for lining sockets. Mottled green on outside and pearl gray inside. Fiber finished under pressure which gives it a gloss finish, furnishing fine reflection for light. So tough that edges will not break and so springy that it cannot crush. Holder of heavy wire; one piece, clamps to socket with a catch. One catch and no screws. Fastens to inside of shade and any tendency to pull off only makes it hold more securely.

Light as aluminum shades, which means cheap freight rates.

TO INTRODUCE ABROAD:
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Palmer Gasoline Engines and Launches.

Over 9000 in Successful Operation.

PRICES FOR EXPORT ONLY:

1½ H. P. Two-Cycle Marine Engine	\$ 75.00
3 " " " "	90.00
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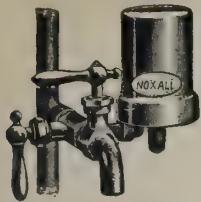
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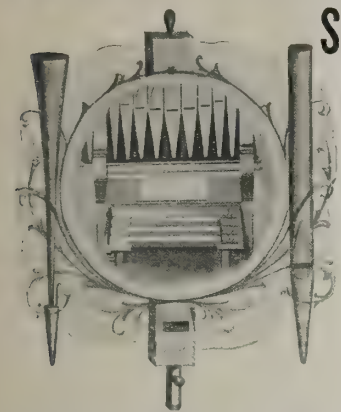
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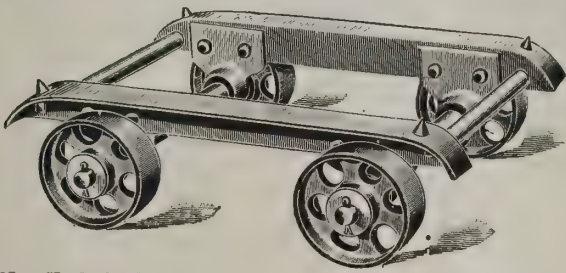
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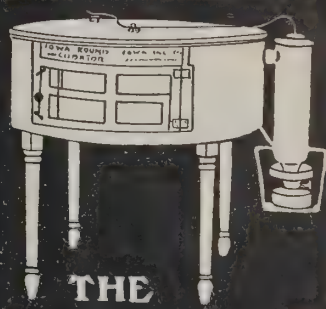
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THE JOHN C. COCHRAN CO.

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THE GENUINE

"O-K" WASHER.

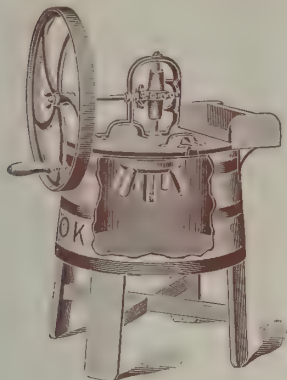
KNOWN AND IN USE THROUGHOUT THE CIVILIZED WORLD.

The O. K. is the KING of ROTARY WASHING MACHINES! Because:

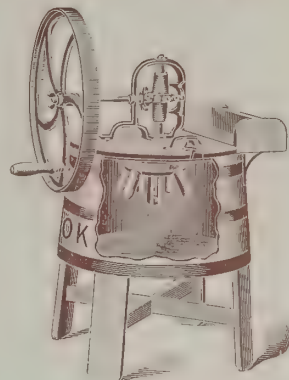
1. The O. K. is the only Rotary Washer that has Revolving Steel Ball Gearing, reducing the friction and thus making the machine so light running and almost noiseless.
 2. The tub is made of Louisiana Red Cypress lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside of the tub, as are all of the castings.
 3. The wheel turns right or left, pin-wheel or dasher reverses automatically, turning the clothes back and forth through the hot soap-suds, and cleaning them without rubbing them to pieces.
 4. The O. K. Washer is made by experienced mechanics, and will outlast any other washer on the market.
 5. The tub has a wringer box, fastened with steel brackets.
 6. The lid on tub closes tight, no escape of steam.
 7. Has guided hoops, castings and name.
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Manufactured Exclusively by

H. F. BRAMMER MFG. CO.,
DAVENPORT IOWA, U. S. A.



O. K. WASHER.



O. K. WASHER.

PELTON WATER WHEELS

PIKES PEAK POWER CO.

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This electric power is supplied to the many mines, mills and other industries in that vicinity. This plant has been running day and night for four years at practically no expense for repairs.

Send for catalog illustrating many other plants of similar character.

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THE SPRAY PAINTER.

FOR APPLYING ANY KIND OF PAINT OR WHITEWASH.

Over 30,000 of Our Painting Machines in Actual Use. More than all other styles combined.

Read the following from one of the largest painting contracting firms in the United States:

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Gentlemen—In reply to your letter of the 25th inst., our contracts on the buildings of the Louisiana Purchase Exposition amount to something over 12,000,000 square feet, all of which is practically completed at this writing, and at least 95 per cent. of this work was done with the machines we bought from you. We examined all of the machines on the market and tested quite a few, finally deciding on your machine and one made by another firm. Shortly after starting work we dropped the other machine entirely on account of the large amount of time lost by the machine getting out of order. We also ran two lines of hose from your machine without increasing the number of men on the pump, something we could not do with any of the other machines, thus increasing the efficiency of both machine and men employed 100 per cent.

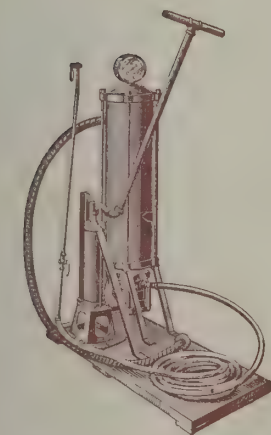
We take pleasure in stating that, in our estimation, your machine is far superior to anything on the market.

The cold-water paint used amounted to almost 400,000 pounds.

Respectfully yours, BUILDERS' CONTRACTING COMPANY.

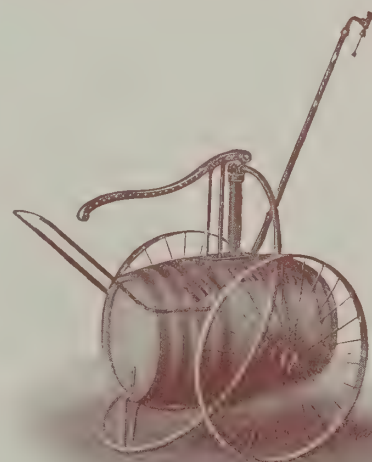
SPECIAL OFFERS FOR EXPORT:

Hook's "Best" Pneumatic Painting Machine (twenty-five of which were used in painting the buildings of the Louisiana Purchase Exposition), equipped with 25 feet pneumatic hose, 8-foot extension rod, for reaching ceilings and overhead work, and two nozzles. Gross weight, 250 pounds. Net weight, 125 pounds. Size of box, 20½x19½x47 inches. **Price, each, \$25.00.**



Hook's "Best" Pneumatic Painting Machine.

Hardie's No. 7 Painting Machine comprises a patented brass pump with brass ball valves, ingenious agitator and paint mixer, contained in a 30-gallon barrel, mounted on wrought-iron wheels, 26 inches in diameter, with 1½-inch tires, and is as easy to wheel as a baby carriage. It is equipped with 10 feet of high-grade ½-inch hose, long extension rod and special disgorging painting nozzle. Will spray any liquid of a sprayable nature. Weight, 110 pounds. Packed in two cases—one 9 cubic feet, one 7 cubic feet. **Price, each, \$17.50.**



Hardie's No. 7 Painting Machine.

The prices above quoted (U. S. Gold) include packing and delivery at New York City.

THE "STAY-THERE" READY-MIXED COLD-WATER PAINT

is composed of minerals ground in a liquid chemical, to be thinned with water. Packed in tight, iron-hooped barrels. It is as durable as oil paint; is fireproof, weatherproof, washable and sanitary.

SPECIAL OFFER FOR EXPORT.

Interior Paint (white), per ton of 2,000 pounds net, - - **\$30.00** Exterior Paint (white), per ton of 2,000 pounds net, - **\$50.00**
Packed in barrels weighing about 400 pounds, measuring 28 x 28 x 20½ inches. These prices are F. O. B. dock at New York City.

THE HOOK-HARDIE CO., MANUFACTURERS, Hudson, Mich., U. S. A.
Cable Address, "Besthook," W. U. Code.

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MARINE GAS ENGINES

Two-Cycle, 3 to 15 Horse-Power. Four-Cycle, 15 to 100 Horse-Power.

SIMPLE
IN DESIGN.
ECONOMICAL.

QUIET
AND POSITIVE
IN ACTION.

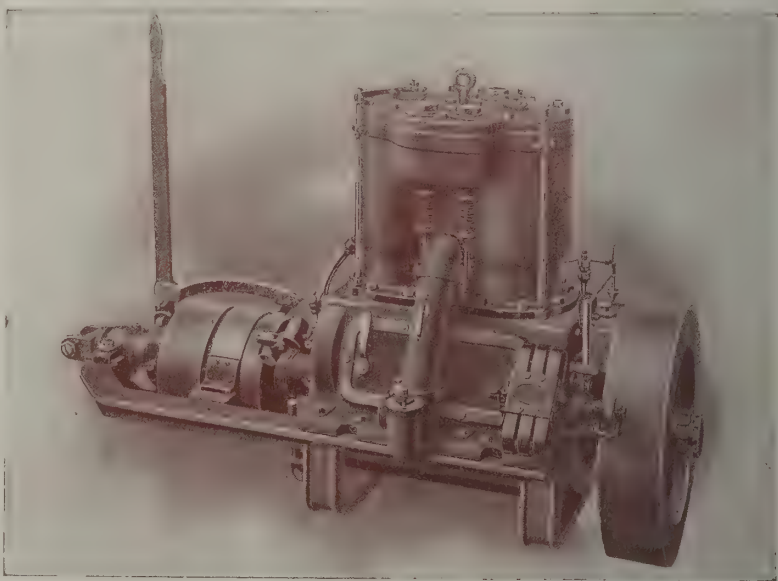
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GASOLINE
ENGINE."



Lozier 25-foot 5 H.P. Launch.

We build Open, Half-Cabin or Full-Cabin Launches from 12 to 62 feet in length.

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Gasoline Engine
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Being Adopted
Throughout the
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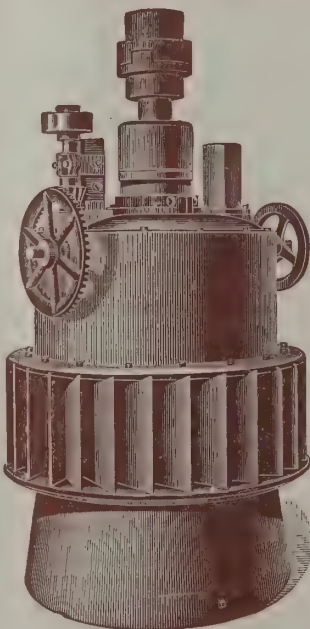
The Lozier 20-Horse-Power Four-Cycle Engine.

Our Catalogue, thoroughly describing and profusely illustrating our Engines, published in the English, Spanish, German, French, Italian, Swedish, Danish and Finnish languages, mailed postpaid to all parts of the world.

THE LOZIER MOTOR CO., 1 BROADWAY,
NEW YORK, U. S. A.

Cable Address: "LOMOCO," New York.
Lieber, Western Union, A B C 4th and 5th, A1 and Private Codes.

The "New American" IS THE Turbine for Export. Why?



Strength, durability and interchangeable parts reduce repairs to a minimum.
Great power for the diameter.
Economy in use of water.

Vertical or Horizontal Installations
to meet requirements.

Our Catalogue, which will be mailed on request, furnishes detailed description.
We also manufacture Gas and Gasoline Engines, Paper and Pulp Mill Machinery, and a full line of Power Transmission Machinery.

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IRON WORKS CO.,**
DAYTON, OHIO, U. S. A.

We Make the Largest Line of SAW MILL MACHINERY in the World.

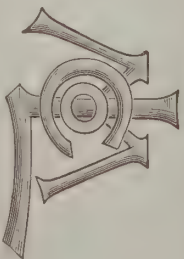
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THE BEST CIRCULAR IS THE

LANE'S PATENT LEVER SET.

Highest Award—Gold Medal at the South Carolina Interstate and West Indian Exposition.

Adapted to all kinds, sizes and lengths of logs; any size from 3,000 feet up daily capacity; single or double, right or left hand.



No. 3 MILL.

With Center Guide for Steam Feed.
Can furnish with Heavy Friction Feed for Water Mills, also with Steel Trucks on Steel Axles extending across the Carriage and Steel Rail Track, instead of Chairs and Rails and Center Guide, if preferred.
Right or Left Hand, Single or Double.

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MONTPELIER, VERMONT, U. S. A.

We also manufacture Saw-Mill Set Works, Dogging Devices, Etc., Water Wheels, Log Jacks, Canters and Niggers, Drag, Swing and Friction Feed Cutting-Off Saws, Live and Dead Rolls, Belgers, Trimmers, Cutting-Off Tables, Lath, Shingle and Chopped Machines, Planers and Matchers, Transmission Machinery and the Anderson Patent Traveling Cranes.

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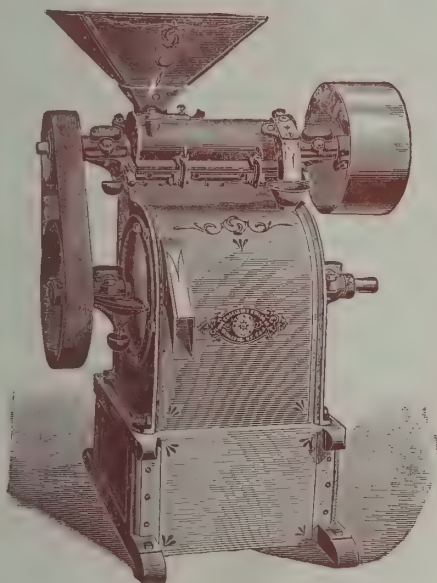
WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIV.

NEW YORK, JULY, 1904.

No. 2.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

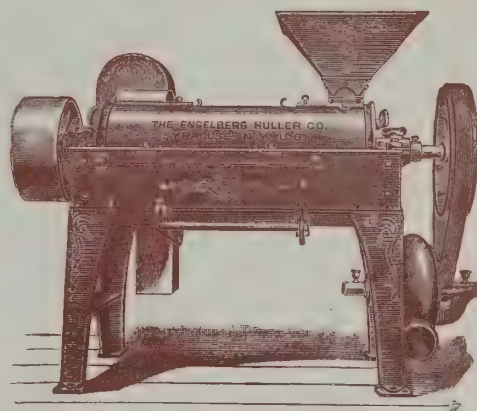


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

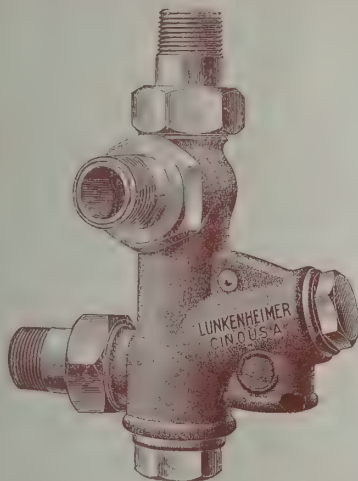
Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the Only machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.



Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

THE ENGELBERG HULLER COMPANY, P. O. Box B,
Syracuse, N. Y., U. S. A.
Export Office: 333 Produce Exchange, New York City.



Lunkenheimer Automatic Brass Injector

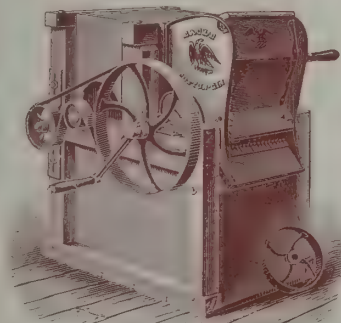
FOR ALL CLASSES OF STEAM BOILERS.

Well designed, compact, efficient, durable, low-priced and reliable. In action it is easy to start, has large range of work, full capacity, is absolutely automatic and the discharge can be graded within wide limits. All parts are well proportioned, strong and durable, and any worn-out piece can be easily and quickly replaced at slight expense. Starts low at 22 lbs., works high to 185 lbs. Feed water 75°, lift 3 feet, works without adjustment of steam or water at pressure from 60 to 180 lbs. Automatically restarts if operation is temporarily interrupted. Tubes are easily removed for examination or repairs by the use of a simple wrench. Devoid of small parts which are easily lost or unreliable in action. 50 per cent. more durable than any other machine of its class. Retains original efficiency under constant usage, and slight wear on tubes will not impair its operation. Works well with hot feed water and on long lifts. Every injector subjected to rigid tests and carefully inspected before shipment.

Impartial tests solicited and satisfaction guaranteed. Specify LUNKENHEIMER Automatic Injectors and order from any leading export house. Write for catalog of Brass and Iron Steam Specialties and Engineering Appliances of superior quality.

Branches: 26 Cortlandt St., New York.
35 Great Dover St., S. E., London.

THE LUNKENHEIMER CO., Sole Makers, Main Offices and Works:
CINCINNATI, OHIO, U. S. A.

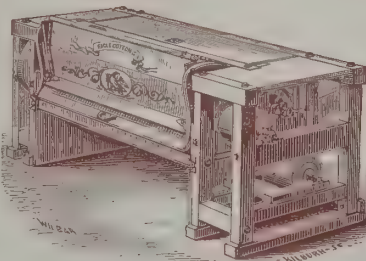


Hand Gin.

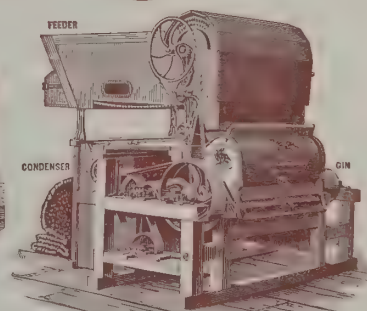
EAGLE COTTON GINS.

These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

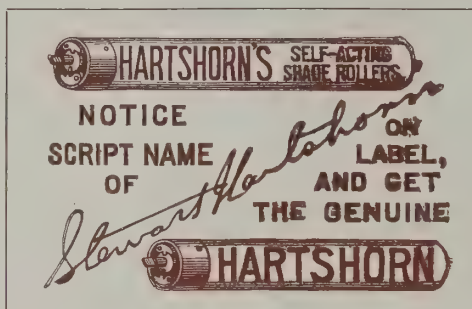
CONTINENTAL GIN CO., Inc., Successors to EAGLE COTTON GIN CO.,
BRIDGEWATER, MASS., U. S. A.

Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

BEWARE
OF
IMITATIONS



BEWARE
OF
IMITATIONS

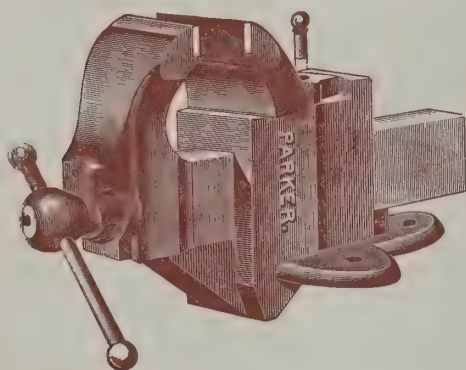
Sold All Over the World. Order through your Commission Men.

STEWART HARTSHORN CO.

Office and Factory:

EAST NEWARK, NEW JERSEY, U. S. A.

Stockroom: No. 7 Lafayette Place, New York.



THE Parker Vise

Unequaled for
Strength, Durability
and Finish.

Has stood the test of over
50 YEARS.

EVERY VISE MADE FOR
SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP
USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over 60 YEARS and will stand comparison with any Mill in the market.

We manufacture a line of

Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

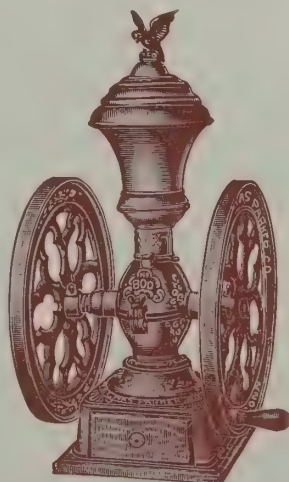
Enquiries concerning our line will have prompt
attention. Catalogues on application.

THE

CHAS. PARKER CO.,

MERIDEN, CONN., U. S. A.

NEW YORK SALESROOM: 96 CHAMBERS STREET



DIETZ Nos. 30 and 60 TUBULAR SEARCH LIGHTS.

These lamps are made for outdoor or indoor use. They give a powerful and brilliant light, and are not affected by the wind.

They are suitable for use in mills, workshops, warehouses, stables and summer resorts, or in any other place where a good light is required which will not be affected by strong breezes.

Where it is desired to light up a long row of animals or a long, narrow room of any kind, these lamps are especially desirable.

No. 30 is fitted with our patent bull's-eye lens on perforated plate, adding to the appearance of the light.

No. 30 has a blizzard globe, 1-inch wick and a bright tin reflector 12 inches in diameter. Price, \$30.00 dozen.

No. 60 has a No. 2 globe, 1 1/2-inch wick and a bright tin reflector 16 inches in diameter. Price, \$72.00 dozen.

We are pleased to send complete catalogues (Spanish or English) and price list to those interested.

R. E. DIETZ COMPANY,

NEW YORK, U. S. A.

Established 1840.



Arcade Manufacturing Co.

(INCORPORATED 1885).

Manufacturers of

"HANDY" CORK PULLER,
"CHAMPION" CORK PULLER,

Phoenix Cork Puller, Perfect Lemon Squeezers
and "Crystal," "Imperial," "Jewel,"
"X-Ray," "Royal Pound," "New
Home" and "Favorite"

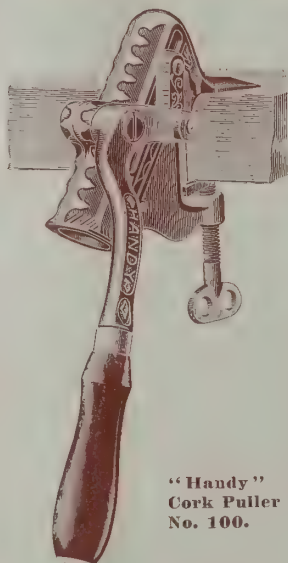
COFFEE MILLS,

AND

"PERFECT" LEMON SQUEEZERS

NOTE.—The prices here quoted include boxing ready for transportation and delivered F. O. B. cars at New York City.

No. 100. Handy Cork Puller is "A Little Beauty." Is simple, compact and reliable. Can be fastened to a bar or table in the regular way; packed one in a box, twelve in a case. Price per dozen, cased ready for transportation, \$12.50. Size of case, 13x17 1/4x28 inches. Weight: Gross, 80 pounds; Net, 66 pounds.

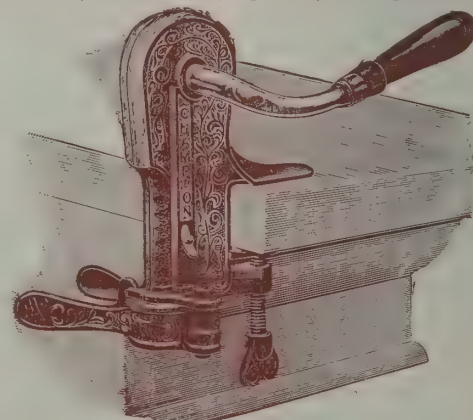


"Handy"
Cork Puller
No. 100.

No. 1. Champion Cork Puller. The Champion "is abreast of the times," and "way ahead of all competitors; will quickly and safely draw the cork from any bottle, and as readily recorks the bottle after part of contents has been used—a feature highly appreciated by all users. Made of the best grades of oil-tempered steel. A quick and sure puller and effective recorker. Especially adapted for use in hotels, cafés, clubs, restaurants or wherever a stationary puller can be used. Packed in individual boxes. Each case contains six (6) Champion Cork Pullers. Price per dozen, \$24.00. Size of two cases, each containing six Champion Cork Pullers, 15 1/2x24 1/2x26 inches. Weight: Gross, 128 pounds; Net, 90 pounds.

Orders received direct or through export commission houses. Please mail us duplicate of order. NOTE.—Our Catalogue, illustrating and describing the various styles of Hardware Specialties Manufactured by us, mailed postpaid.

ARCADE MANUFACTURING CO., - Freeport, Ill., U. S. A.



"Champion" Cork Puller No. 1.

GRAND RAPIDS DESK COMPANY,

Manufacturers of **HIGH-GRADE DESKS** OFFICE HOME **FOR EXPORT.**

ESTABLISHED 1880.

ESTABLISHED 1880.



Send for **Net Export Prices**, which include boxing and delivery F. O. B. New York.

OUR NEW ROLL-TOP DESK
No. 516.

PRICE, \$170.00

Our 100-Page Catalogue, illustrating and describing the many styles of **DESKS** made by us, mailed post-paid to all parts of the world.

NEW DESIGNS.**SUPERIOR WORKMANSHIP.****SUPERB APPEARANCE.**

Our New Line of Desks, for All Uses, Recently Placed Upon the Market, Embody the Results of Over 23 Years' Practical Experience in Actual Manufacturing.

GRAND RAPIDS DESK CO., MUSKEGON, MICH., U. S. A.

Double Engine Traction

In **THREE** Sizes:

20 H. P.	-	Weight, 9½ Tons
25 H. P.	-	Weight, 10½ Tons
30 H. P.	-	Weight, 11¼ Tons

Boxing for Export will increase weight 20 per cent.

Hauling Capacity, - 15 to 25 Tons,
BESIDES FUEL AND WATER.

These Engines Always Give
Maximum Power.

They use
Wood,
Coal or
Straw
for fuel.



Where the reduced speed of a single engine will stall it, the **Double Engine** walks right along.

Wheels (22 to 28 inch face) shown are for Threshing and Plowing Traction.

Special Wheels
for Freighting.

Boilers are of ample size. With indifferent fuel under severest stress will blow off.

Engines on "belt-brake" show easily 40 to 60 per cent. increase in power over above rating.

WATEROUS, Brantford, Canada.

Representatives Abroad:
WM. FLEMING, Sydney, N. S. Wales
NEIL CURRIE, Santiago, Chili
MOFFAT, HUTCHINS & CO., Cape Town, So. Africa



"The Way of the World"
To the
World's Fair
Big Four Route
To St. Louis.

Daylight Entrance via the Merchants' Bridge—giving the passenger a fine panoramic view of the Mississippi River, Levee District and great Warehouse District of St. Louis.

Ask nearest Big Four Agent for information or
WARREN J. LYNCH.
Gen'l Passenger and Ticket Agent,
CINCINNATI, OHIO.

C. L. HAUTHAWAY & SONS,

346 Congress St., Boston, Mass.,
U. S. A.

Specialties.



Regular
4-oz. Bottle.

Best dressing put up and warranted in all respects.



Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

For polishing patent leather shoes quickly and without injury to the leather.



"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the



WHITE LILY WASHER.
WASHES LILY WHITE.

White Lily Washer.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is 2 3/4 turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** (\$30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**

Weight, 600 lbs. Measurements: 18x24x24 inches.

WHITE LILY WASHER CO.,

MANUFACTURERS,
DAVENPORT, IOWA, U. S. A.

LOVELL MFG. CO.

Erie, Pa., U. S. A.

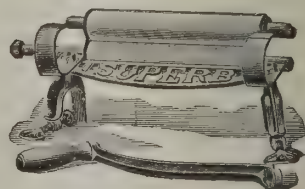
Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

**ANCHOR BRAND CLOTHES WRINGERS,
RAT and MOUSE TRAPS.**



Send for
Catalogue
and
Prices.



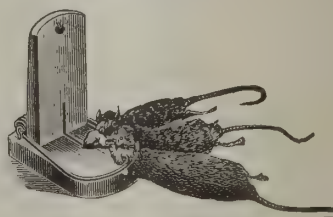
We make a full line of
CLOTHES WRINGERS
for the Export Trade



Delusion
Mouse Trap.

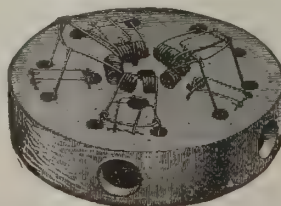


Rex Trap.
Made in two sizes:
large size for rats;
small size for mice.



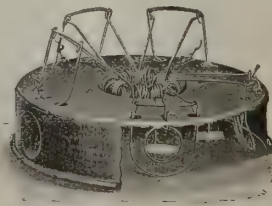
Erie Rat Trap.
Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch,"
MOUSE TRAPS—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker,"
"Easy Setting Wood Choker," "Cyclone," "Yankee," "Rex" and "Sure Catch."



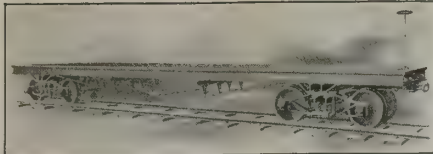
Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of
Wringers
in English only
and of Rat
and Mouse
Traps in both
English and
Spanish.

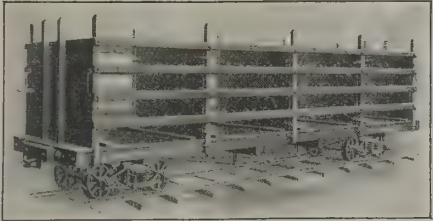


Lovell's Easy-Setting Metallic Mouse Trap.

CONTINENTAL CAR AND EQUIPMENT CO.



ALL-STEEL FLAT CAR.



CUBAN CANE CAR.

FOREIGN DEPARTMENT:
Whitehall Building, Battery Place, New York, U. S. A.
Cable Address: "CONEQUICO," New York.

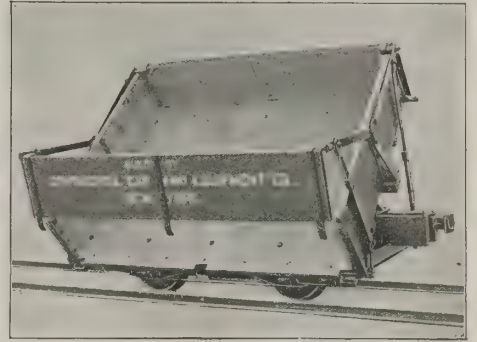
MANUFACTURERS OF

Railway Freight, Plantation, Industrial and Mining Cars.

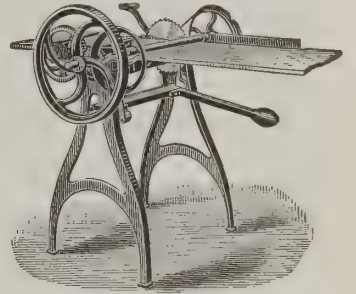
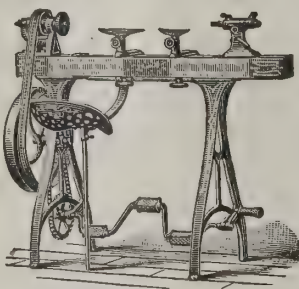
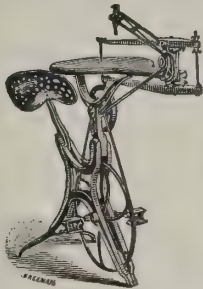
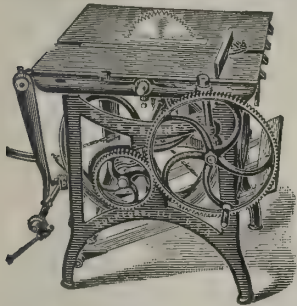
We also make Special Cars for all purposes, from designs furnished, or will furnish our own designs upon request
FOR FOREIGN MARKETS.—Our Cars are taken apart and packed for shipment according to the best known methods.

Our Catalogue (English and Spanish), illustrating and describing the various styles of STANDARD CARS made by us, mailed postpaid.

Please mention THE AMERICAN EXPORTER.



This cut shows our modern Dumping Car. It dumps on both sides of the track and is built strongly for hauling and dumping dirt, rock, sand, clay, ore, etc. Built in all capacities from 1 to 5 cubic metres.



**SCROLL SAWS, CIRCULAR SAWS, LATHES, MORTISERS,
TENONERS, GRINDING MACHINES, DRILLING MACHINES, ETC.**

Particular attention given to the proper execution of orders for export. Illustrated catalogues and price lists in Spanish and English free on application. Orders received through any reliable commission house in the United States. Prices and trade discounts quoted on application.

W. F. & JOHN BARNES CO., Sole Manufacturers,
791 Ruby Street, ROCKFORD, ILLINOIS, U. S. A.

MONROE PORCELAIN REFRIGERATORS.

THE MONROE IS A HIGH-GRADE REFRIGERATOR,
BUILT FOR THE HOUSEHOLD.

Each food compartment is moulded in one solid piece of porcelain. The corners are rounded. There are no joints or crevices for the food to decay in. The porcelain is white, durable, and as easily cleaned as a china dish. The ideal house refrigerator, absolutely sanitary. The prices here quoted for foreign markets only (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

**MONROE No. 21, Style D, Solid Porcelain Inside,
Oak Exterior, \$54.00**

Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.

**MONROE No. 30, Style E, Solid Porcelain Inside,
Oak Exterior, \$69.00**

Crated, measures 49 x 27 x 57 inches. Gross weight, 820 lbs.

All sizes carried in stock ready for immediate shipment.
Special sizes built to order.

Our latest catalogue, illustrating and describing the various styles of Solid Porcelain Refrigerators made by us, mailed postpaid.

Orders received direct or through export commission houses. When ordering through the latter, to prevent errors, kindly mail us a duplicate of order.

Monroe Refrigerator No. 21. Style D.

Monroe Refrigerator No. 30. Style E.

MONROE REFRIGERATOR CO., Patentee and Manufacturer, **LOCKLAND, OHIO, U. S. A.**

CELLULOID
ADVERTISING
NOVELTIES,
SIGNS,
BUTTONS,
MEDALLIONS,
BADGES
&c.

MEMORANDUM BOOK

MATCH BOX

TAPE MEASURE

KEY RING

CATALOGUE, ESTIMATES AND SPECIAL DESIGNS ON APPLICATION.

ADDRESS, EXPORT DEPT.

BALTIMORE BADGE & NOVELTY COMPANY.

BALTIMORE, MD., U.S.A.

"THE SUN NEVER SETS UPON"

THE GENUINE

"O-K" WASHER.

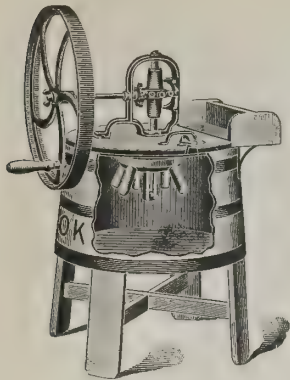
KNOWN AND IN USE THROUGHOUT THE CIVILIZED WORLD.

The O. K. is the KING of ROTARY WASHING MACHINES! Because:

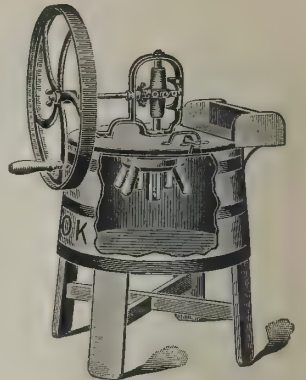
1. The O. K. is the only Rotary Washer that has Revolving Steel Ball Gearing, reducing the friction and thus making the machine so light running and almost noiseless.
 2. The tub is made of Louisiana Red Cypress lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside of the tub, as are all of the castings.
 3. The wheel turns right or left, pin-wheel or dasher reverses automatically, turning the clothes back and forth through the hot soap-suds, and cleaning them without rubbing them to pieces.
 4. The O. K. Washer is made by experienced mechanics, and will outlast any other washer on the market.
 5. The tub has a wringer box, fastened with steel brackets.
 6. The lid on tub closes tight, no escape of steam.
 7. Has gilded hoops, castings and name.
- Prices quoted F. O. B. New York. Each O. K. Washing Machine, crated, ready for transportation abroad, weighs about ninety (90) pounds, and occupies nine (9) cubic feet.

Manufactured Exclusively by

H. F. BRAMMER MFG. CO.,
DAVENPORT IOWA, U. S. A.



O. K. WASHER.



O. K. WASHER.

OCEAN WAVE WASHERS

Wash the clothes as easily and cleanly as
sea waves wash the beach.

OVER 100,000 NOW IN USE.

Shipping weight, 85 lbs.

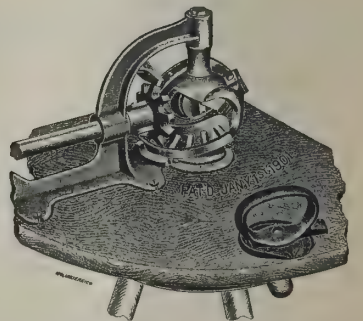
Size, 2 x 2 x 3—12 cubic feet.

SPECIAL FEATURES.

Our Gearing: Simple in construction; impossible to throw out of gear; the longer it is used the easier it will run. Our Fly Wheel has no threads to strip; no nuts to lose, being attached or detached in a moment's time. Our Improved Dasher is hand-turned; clothes do not cling to it and tear. We assure free action of dasher by using heavy galvanized flanged ring in dasher block, thereby relieving all friction. In general construction of tub and finish, only best materials are used. We ship through any responsible New York exporter. All orders must be sent to us direct.



ONCE SOLD, THEY NEVER COME BACK.

THERE IS NO FRICTION.
NO LOST MOTION.

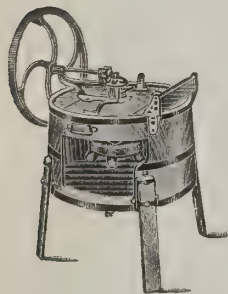
VOSS BROS. MFG. CO.,
DAVENPORT, IOWA, U. S. A.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."

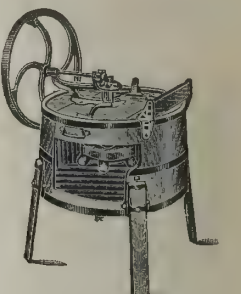
THE **Guarantee**
FOUR-STROKE ROTARY
Washing Machine

Just placed upon the foreign and home markets, combines the Latest Improvements in High-Speed, Ball-Bearing Washing Machines and will accomplish all that is claimed for or required of any washing machine, and more.

**NOT A SPECULATION, BUT AN INVESTMENT, the returns of which will pay
you ONE HUNDRED (100) PER CENT.**



GUARANTEE WASHER.

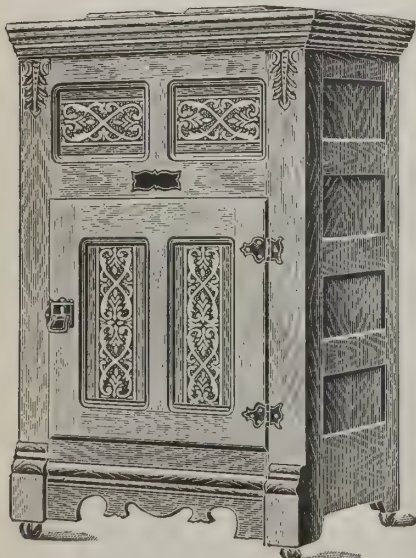


GUARANTEE WASHER.

FOR TWENTY DOLLARS in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines.** (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds. Order **FOUR NOW.** Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States.
NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.



Chilkoot Refrigerator No. 0103.

MICHIGAN BARREL CO.,

Grand Rapids, Mich., U. S. A.

MANUFACTURERS OF

HIGH-GRADE REFRIGERATORS.

None but the most skilled mechanics are employed, and none but the highest grade of material enters into the making of our refrigerators.

SPECIAL SAMPLE ORDER FOR EXPORT ONLY:**ECONOMIC REFRIGERATOR No. 204.**

Solid Ash; Insulated with Charcoal Sheathing and Mineral Wool; Patent Adjustable Shelves; Zinc-Lined; Economy in Ice; Perfect Circulation. Net weight, 155 lbs. Gross weight, 240 lbs. Outside measurement, 38x19x42 ins.

PRICE, f. o. b. New York, \$13.60.

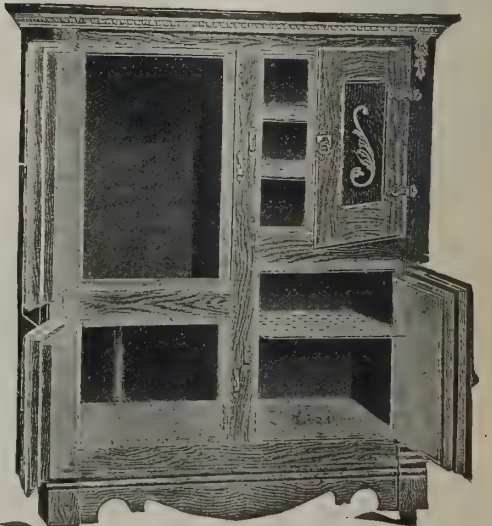
CHILKOOT REFRIGERATOR No. 0103.

Made with Hardwood, Golden-Oak Finish; Insulated with Charcoal Sheathing. Net weight, 135 lbs. Gross weight, 210 lbs. Outside measurement, 30x20x45 ins.

"The Best Low-Priced Refrigerator on the Market."

PRICE, f. o. b. New York, \$9.40.

NOTE.—Our catalogue, illustrating and describing the various styles of REFRIGERATORS made by us, mailed postpaid.



Economic Refrigerator No. 204.

TUILERIES

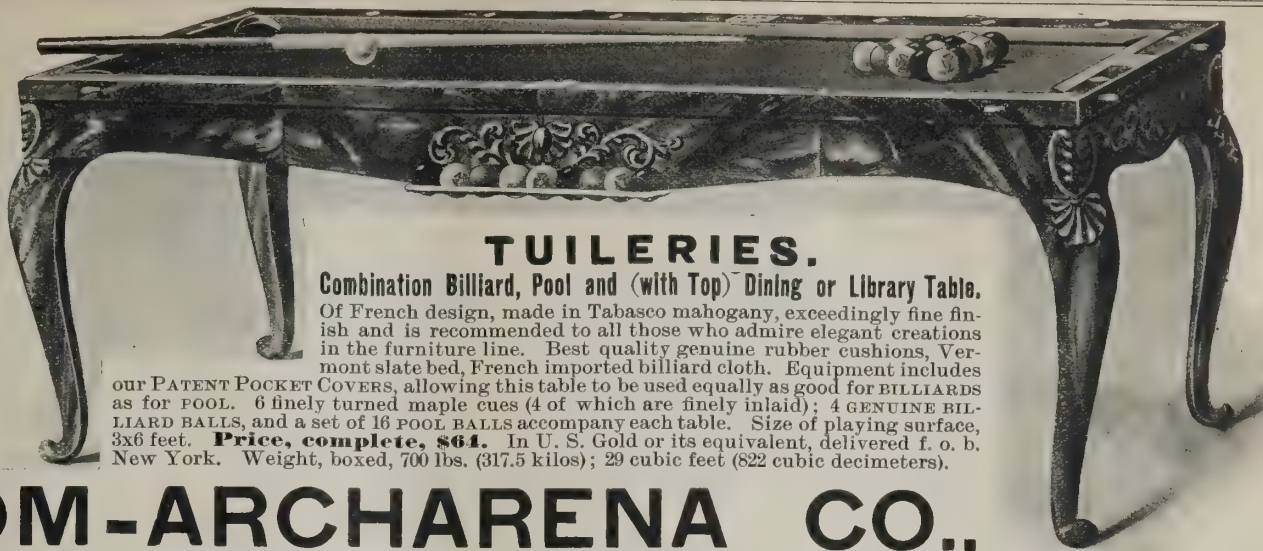
MADE BY

**CARROM-
ARCHARENA CO.,**Largest Makers of
Game Boards in the World.

Our Illustrated Catalogue, printed in colors, showing the various styles of Game Boards made by us, mailed postpaid.

Orders received direct or through export commission houses. When ordering through the latter, to prevent errors, please mail us a duplicate of order.

Our Catalogue, illustrating and describing our various styles of Combination Library, Dining, Billiard and Pool Tables, mailed postpaid.

**TUILERIES.****Combination Billiard, Pool and (with Top) Dining or Library Table.**

Of French design, made in Tabasco mahogany, exceedingly fine finish and is recommended to all those who admire elegant creations in the furniture line. Best quality genuine rubber cushions, Vermont slate bed, French imported billiard cloth. Equipment includes OUR PATENT POCKET COVERS, allowing this table to be used equally as good for BILLIARDS as for POOL. 6 finely turned maple cues (4 of which are finely inlaid); 4 GENUINE BILLIARD BALLS, and a set of 16 POOL BALLS accompany each table. Size of playing surface, 3x6 feet. **Price, complete, \$64.** In U. S. Gold or its equivalent, delivered f. o. b. New York. Weight, boxed, 700 lbs. (317.5 kilos); 29 cubic feet (822 cubic decimeters).

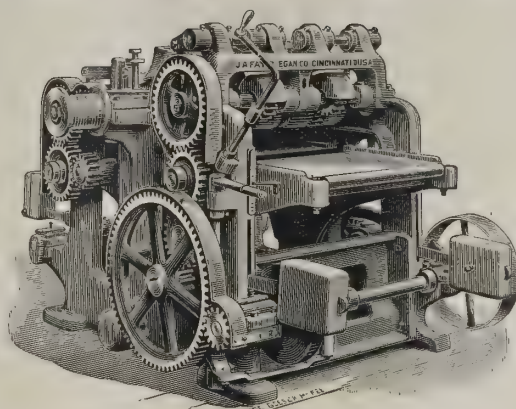
CARROM-ARCHARENA CO.,

LUDINGTON, MICHIGAN, U. S. A.

Wood-Working

We make a complete line of machines for cutting wood, which we can furnish in single tools or entire outfits. Machinery in use all over the world, by governments, corporations and individuals.

Full particulars of any machines sent on demand. Catalogues in Spanish, French, German or English free. We correspond in Spanish, and invite correspondence about any machines for working wood you may feel interested in.

**Machinery.****No. 29. New Single Cylinder Planer.**

(Patented December 19, 1899; February 6, 1900.)

An entirely new planer containing many advantages for insuring good work. One of our most successful specialties is planing machines, and this is the newest and one of the very best. All users of planing machines should notice this point: the feeding-in roll is in sections, and each section is center-geared, so that two or more pieces of uneven thickness can be planed at the same time, and each receive an even pressure.

J. A. FAY & EGAN CO., 164-184 W. Front St., **Cincinnati, Ohio, U. S. A.****BALKE MANUFACTURING CO.,**

Patentees and Manufacturers of

**Balke Combination Davenport, Billiard and Pool Tables,
and Standard Tables.**

INCORPORATED \$100,000.



Style "A," as a Davenport.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note—The prices here quoted, U. S. Gold or its equivalent, are for **Foreign Markets Only**, and include boxing ready for steamer, delivered f.o.b. cars at New York City.

Style "A," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

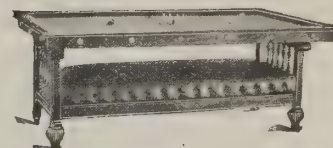
Style "A," converted into a Billiard or Pool Table, has a playing surface of 3½x7 feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, **\$95.00.** Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: 4'x8'x6'; 32"x36"x6'.

Standard Billiard Tables.

"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4x8 feet. Price complete, **\$125.00.** Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: 4'2"x8'2"x8"; 4'x8'2"x2'.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, 3½x7 feet. Price complete, **\$90.00.** Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: 4'x8'x8"; 3'6"x6'x2'.

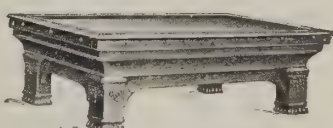
Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order. Our catalogue, illustrating and describing the various styles of Billiard and Pool Tables manufactured by us, mailed postpaid.



Style "A," converted into a Billiard Table.



Benedict Special Billiard Table.



"Den" Special Billiard Table.

BALKE MANUFACTURING CO., Grand Rapids, Mich., U. S. A.**THOMAS K. OBER & CO. (INC.)**832 DREXEL
BUILDING,

Sole Export Agents of the Kitson Hydro-Carbon Heating and Incandescent Lighting Co.

PHILADELPHIA,
PA., U. S. A.

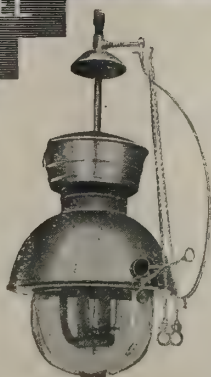
What helps to sell goods?
What advertises your place of business?
WHAT BRINGS TRADE?
What makes the home more inviting?

LIGHT.**Use Keros Incandescent Oil Lamps**

in your shop and they will pay for themselves in a month in increased trade. Most economical light in the world. Burns 90 per cent. of air to 10 per cent. of vaporized oil.

One Gallon of Kerosene Oil Gives a 1,000-Candle-Power Light for Twenty-five Hours. Perfectly Safe. Does Not Increase the Insurance.

Send for Illustrated Catalogue and Price-List, giving full information.
See June number of this Journal for illustrations of various styles.



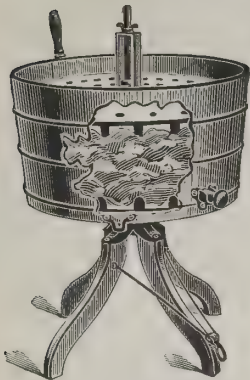
No. 190x.
Outside Lamp;
outfit with
tank;
2,000 candle-
power;
30 inches.



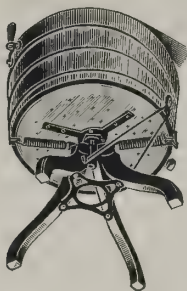
No. 501.
Bracket Lamp; outfit with
tank; 1,000 candle-power;
15 inches.

"1900" Washing Machine

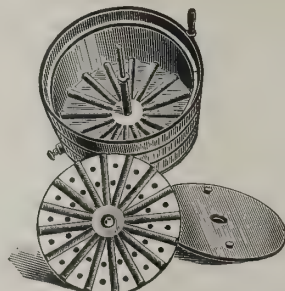
AND ITS PARTS.



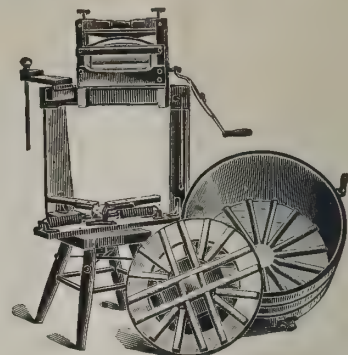
Interior view, showing clothes in process of washing.



Looking under Bottom of Washer.



Inside view of Tub and Bottom of Agitator.



Shows Washer with the tub removed from the frame and the agitator or disk which rests on the clothes and water during washing. It also shows the wringer in position as when in use.



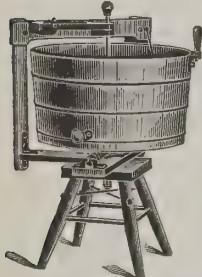
"1900" Washer.



"Domestic" Washer.



"Home" Washer.



"1900 Junior" Washer.



"1900" Washer.

A Remarkable Record!!! Reward of Merit!!!

Commencing in the year 1900 to manufacture the "1900" Washing Machine, we at that time "turned out" an average of Five Washers per day. During the month of August, 1903, we manufactured and sold OVER FOUR HUNDRED Washers per day.

A Remarkable Record!!! Reward of Merit!!!

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-one years' practical experience in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment**, but by the adoption of our **agitator** tosses and tumbles the garment through a **whirlpool of water**, thus **forcing the water through the finest or coarsest fabrics**, causing the clothes to become **ABSOLUTELY CLEAN**, without boiling or scrubbing, without wear or tear, and without the use of chemicals.



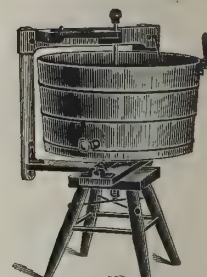
"1900" Washer.



"Domestic" Washer.



"Home" Washer.

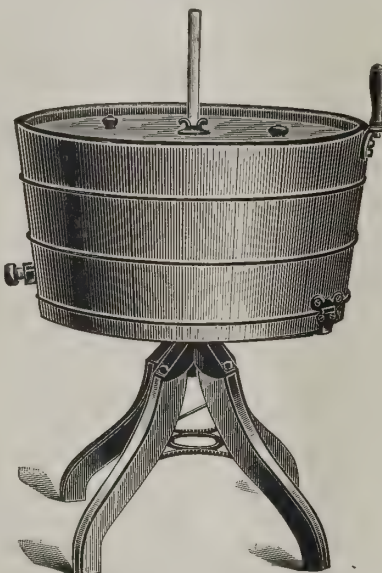


"1900 Junior" Washer.



"1900" Washer.

"1900"
Ball-Bearing
Washing
Machines.



THE "1900" WASHING MACHINE.
Complete, Ready for Use.

"1900"
Ball-Bearing
Washing
Machines.

Special Offer for Foreign Markets Only:

\$22.75

Upon receipt of **Twenty-two Dollars and Seventy-five Cents** in U. S. gold, or its equivalent, we will box, ready for steamer, and deliver F. O. B. cars at New York City, **One of Each (Four in All), "1900," "1900 Junior," "Domestic" and "Home" "1900" BALL-BEARING WASHING MACHINES.** Weight of the four machines, boxed, 340 pounds.

To facilitate our increasing export trade we desire to communicate with one responsible business house in each trade center of the world.

Tens of thousands of the "1900" Washing Machines have been sold in the United States, as well as in all parts of the world. Many of our agents at home are making over \$200 per month. Live men in your vicinity can do as well.

Orders received direct or through export houses; when ordering through the latter, to avoid errors, please mail us a duplicate of order. Our Illustrated Catalogue mailed postpaid.

The "1900" WASHER COMPANY
BINGHAMTON · NEW YORK · U.S.A.



[Founded by ROOT & TINKER, 1877].

WITH WHICH IS INCORPORATED

THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by HOWARD LOCKWOOD & Co., 1877.]

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EDWARD W. DREW, - - - Editor.

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FOREIGN BUYERS OF AMERICAN GOODS
PROFIT BY LOW PRICES.

A PRESIDENTIAL campaign is in progress in the United States of America at the present time. It is of great importance to the inhabitants of this country, but the affairs of the nation are in such a prosperous condition and the domestic balance of trade is so well maintained that the result, whichever way it may go, cannot have any unfavorable effect upon the future of the country—either in a business or governmental way. Questions of politics are not open for discussion in these columns, but the campaign has brought out some facts of great interest to our foreign readers. Mr. Secretary Shaw, head of the United States Treasury Department, is one of the leaders of the dominant party and is in a position to know whereof he talks. In a recent speech he replied to the attacks of his political opponents which were based upon the assumption that domestic purchasers of American products could not buy them as cheaply, for the same quality, as could foreign customers of American manufacturers. It has often been pointed out in THE AMERICAN EXPORTER that our manufacturers do business upon a basis of moderate profits, quick sales and fair treatment of their customers. It is doubtless true that in the export trade some manufacturers are content with a slightly smaller percentage of profit, based upon a desire to offset in part the greater expense of delivery to world-wide distant points. In such cases the goods shipped are not only equal to the home standard, but our exporters would make the articles better if possible.

Taking these facts into consideration our foreign readers will be much interested in the following extracts from Mr. Secretary Shaw's speech:

"Our opponents lay much stress upon the fact that some American manufactures are sold abroad cheaper than at home. Our friends sometimes deny this, and they sometimes apologize for it, and a few in times past have joined our opponents in recommending a removal of the tariff from all such articles. It is useless to deny, and in my judgment unwise to apologize, and little short of foolishness to attempt to remedy, the assumed evil in the manner proposed by the opposition.

"A non-partisan commission, appointed by Congress to investigate the subject, with authority to compel the attendance of witnesses, reported that \$4,000,000 worth of merchandise, the product of American factories, is annually sold abroad cheaper than in the domestic market. The report shows that some of these articles are protected in this country by patents, and are not so protected in the foreign markets. If the supposed evil as applied to patented articles is worthy of drastic remedial measures the most feasible would be the repeal of patent laws.

"There is one other important feature not often recognized. The

Republican party has always provided a method whereby a manufacturer can have the benefit of free raw material for the production of merchandise actually exported. Under regulations prepared by the Secretary of the Treasury the consumer of imported material is allowed to recover the duty paid thereon whenever he exports the same or any article manufactured therefrom.

"During the fiscal year 1903, the amount of drawbacks thus actually recovered exceeded \$5,000,000. A portion of this was upon goods exported direct from warehouses, and upon which no labor had been expended. But if the Industrial Commission reported correctly, that only \$4,000,000 worth of merchandise is annually sold abroad cheaper than at home, then the annual drawback on imported material would seem to remove any presumption that an injustice is being perpetrated upon the American consumer. A very small portion of the \$5,000,000 drawback would cover the difference between the price at which this merchandise is sold abroad and the domestic price.

"We manufacture \$13,000,000,000 worth per annum. This industrial commission reported that an aggregate of \$4,000,000 per annum, or one thirtieth of 1 per cent. of the output of our factories, is sold abroad cheaper than at home. In other words, this non-partisan industrial commission, after spending months in taking testimony, reported that of every \$1,000 worth of manufactures produced by American labor 30 cents' worth is sold abroad cheaper than to our own people, or, stated in another form, every time \$700 is paid to labor employed in shop and factory, 30 cents' worth of goods, the product of this labor, is sold abroad for 29 cents.

"While our people complain of this practice, I think it defensible. But, whether defensible or not, I know that foreign producers do the same thing. Nearly every class of goods imported into this country is obtainable below the regular foreign market."

Mr. Secretary Shaw is a high authority upon this subject and his utterances are well worthy of attention, or we would not give them this prominence. Our foreign readers can study what he says with undoubted profit to themselves.

SOME of our Paris contemporaries do not take the American World's Fair now being held in this country in as serious a vein as the Exposition deserves, but this lack of appreciation is more than made up for by the high tributes which have been paid by M. Jusserand, the French Ambassador to the United States, in the official communications which he has sent to his government. One of the Paris editors declares that all the Exposition represents is a "lavish expenditure of American dollars without adequate artistic results." M. Jusserand maintains that the Exposition is exceptionally artistic and beautiful and as he has made an inspection of it his conclusion will be generally accepted as being in full accord with the facts. As a matter of current history it may be said that the American show at St. Louis has been characterized by competent observers, who have had the advantage of experience in attending such expositions, as being one of the most marvelous of the kind that they have ever seen.

CURRENCY for the new Republic of Panama is a question of international concern in which the United States takes particular interest from the fact that this country was instrumental in giving birth to its youthful sister republic. The Panama Government has wrestled with the problem without result and our authorities have been appealed to for aid and advice. It is probable that a financial system will be recommended and adopted which will substantially duplicate the features of the monetary plan which is in force in the Philippines; namely, the establishment of gold-dollar unit, with a silver peso of the value of half a dollar (50 cents) in gold as the common circulating medium. If this plan goes through it will prove much more satisfactory than anything else that has been suggested.

TYPEWRITERS of American manufacture show an export increase in sale of more than \$500,000 in the last reported ten months. Our typewriters are marvels of perfection and adaptability to all of the written languages.

OUR AGRICULTURAL IMPLEMENTS.

EXPORTS of agricultural implements from the United States to foreign countries amounted to \$25,000,000 in the fiscal year ending June 30th, being an increase of \$4,000,000 over last year and a gain of \$9,000,000 over the preceding year. The Department of Commerce in commenting upon the growth of this branch of our foreign commerce, says: "In no class of manufactures exported has the growth been more steady and persistent than in that of agricultural implements." This condition is very gratifying to THE AMERICAN EXPORTER, for the most successful concerns engaged in this trade have been in the habit of using our advertising columns to attract foreign patrons. On another page will be found some details of the increase and other information showing the distribution of our exports in this line.

Not everybody will realize what it means to add in a year \$4,000,000 worth of exports of American or any other nation's products of this kind as an excess to what was sold the year before. With American machines for farm purposes it means a great deal more than the ordinary reader will appreciate, for our manufacturers are producing farm implements that for proper weight, worth and utility are not excelled by any other manufacturers, while there is the added strong point of durability. Our agricultural implements are first made to be used; secondly to be sold. This reverses the usual order of business, but the concerns which advertise in this journal have acted upon that principle and have found that their honesty of purpose is appreciated by agriculturists throughout the world. It may soon be said that our agricultural implements are being made to be sold as well as to be used and perhaps later on the conditions will assume the normal aspect, but there will be no change in the excellent quality, nor will there be any diminution of the durability of the implements.

The concerns engaged in the manufacture of agricultural implements in the United States are controlled by gentlemen who take as much pride in the perfection of their products as they do in the profits which may come to them from making larger sales. They are honest men. They give to the farmer in South Africa, in Australia, in India, or anywhere else in the world, just as good a plow, thresher or other machine as they would furnish to their own neighbors, and at relatively the same price. The policy of this course would not appeal to any but progressive men, who realize that good implements last longer than defective ones, but that the user is likely to be possessed of proper intelligence to realize the fact—especially if he has had experience with goods that are cheap in price, but costly through defects.

FARM MACHINERY VS. THE FARM HAND.

AMERICAN farming machinery enjoys a deserved popularity throughout the world, but nowhere is it more appreciated than at home. It has been a matter of wonder in the minds of many people as to just where the manufacture of these implements would lead and as to whether the supply would not eventually become greater than the demand. The *Prairie Farmer*, in a recent discussion, has the following to say, which, while it does not solve the problem; furnishes suggestions for thought as to the possible growth of this country, at the same time mentioning some conditions with which some of our agricultural readers abroad are familiar:

"As the population increases and the available land that is open for homestead entry becomes less in quantity and quality, the natural inference would be that laborers on the farm would be more easily secured. But in spite of the above facts, and the additional one that nearly a million immigrants are coming to our shores annually, the cry for farm help becomes more and more insistent with each passing year. The farm help problem is one that cannot be settled by a series of fault-finding on either side. There are good farm hands to be had for their price, and there are many exceedingly poor ones, as we know from experience, that are dear at any price. There are not enough of the former to go around, and the latter are, doubtless, not solely to blame for the dissatisfaction that is so prevalent. There is also, perhaps; as wide a difference between employers as between employees. There is a way, however, of solving

this problem to a considerable extent, and this method is being adopted by the most progressive farmers. The method referred to is the use of improved farm machinery, which does away with a large part of the hired help necessary under older methods of farming.

"The hay harvest will soon be at hand, and it would be well to consider this problem in connection therewith immediately. Not only will machinery save much of the outlay that must otherwise be expended for hired help at haying time, but it will enable the hay to be put up in better condition so that it will have a greater feeding or market value. The loader will pitch hay as fast as several men, and will not go on a strike when the farmer gets a lot of hay ready to haul, as we have known hay harvest hands to do. With the loader he can run in a lot of hay quickly when a sudden rain appears. The sun never gets too hot for it to work, and it will do a much cleaner job in taking up the hay than will a man with a fork.

"Another implement that saves much time in the curing of hay, and which is of very great importance if the hay is at all heavy and the weather bad, is the tedder. A good shaking up and turning inside out by this implement after the top has dried will very greatly hasten the curing process, especially if the hay has been dragged into bunches or been run over by the mower after being cut. This will often mean the difference between having the hay very much damaged by being caught in a rain when partly cured and being able to get it cured and under cover before the rain comes. It is not advisable for the farmer to buy every new machine that comes out without due consideration of its adaptability to his needs, but he should keep himself informed regarding new machinery and study its adaptability, for herein lies, to a considerable extent, the solution of the farm labor problem. Another feature, and one that will appeal especially to the housewife, is that more machinery and less hired help means much less work in the house."

Agriculturists in other lands will find it advantageous to follow the example of our farmers and place their faith in American farm implements.

ELSEWHERE in this issue we print some facts about the steady growth of our export trade with Canada. Regardless of discrimination against us in favor of the United Kingdom, and despite the establishment of manufactories by our own people in the Dominion for the making of American products, it seems that nothing can check the Canadian demand for our manufactured goods. As we have before remarked, the inhabitants of Canada are good judges of values, both as to quality and quantity and they thoroughly appreciate the worth of our manufactured articles.

DESPITE all the bad things that some sensational papers have had to print about the United States Steel Corporation, it appears that the net earnings for the last quarter will be about \$18,000,000. We would not refer to such dreams as some of these papers have printed about the trust. Its affairs have been adjusted upon a basis of supply and demand with a profit and benefit to all of the interests involved.

WE do not like to print statistics and we do not care very much for them at any time, but an esteemed correspondent, Walter J. Ballard, has sent us some figures which show so graphically the progress made by the United States in the last forty years that we have concluded to print his letter. Mr. Ballard uses a lot of figures, but he puts the results in such shape that "those who run may read." His summary is a chart of American progress.

INVENTORS in America have organized a trade union. It is called the Inventors' League, and its purpose is to protect inventors and enable them to put their inventions on the market. The union is unique, but it is nevertheless a progressive step, for many inventions of importance have waited for long periods before their merits have been recognized.

LIQUID AIR'S PRACTICAL USE.

WHAT commercial wonder will come next? Scanning the horizon of invention we believe that liquid air is more likely than anything else to come into general use as a necessity of life, particularly in the tropics and during the heated periods which are seasonable in the temperature zones. Refrigeration and the manufacture of artificial ice have made such strides within the last few years that they have long since gone beyond the experimental stage. Liquid air is by no means new, but its use has been almost entirely experimental up to the present time. It has been a toy, but it promises now to become a wonderful adjunct to human comfort everywhere in the world. There is every indication that the practical application of this wonderful product will go so far as to provide for its daily delivery to offices and households, just as ice, milk, bread, newspapers and other necessities are now delivered in the large cities. It is now reported that some American inventors have perfected their systems to the extent that they are building a plant which will manufacture every twenty-four hours liquid air which in cooling effect will be equivalent to two hundred tons of ice. At first they propose to interest large establishments where the liquid air will be delivered ready for use, at one-twentieth of the present cost. Later, when its value is recognized, it will be delivered to the houses in insulated containers ready to attach to the pipes leading to a coil overhead. This coil, by the way, will be made as ornamental and inconspicuous as possible, and will cost no more than steam or other heating pipes. As nitrogen is one of the most perfect preservatives known, it is predicted that when it becomes plentiful through the manufacture of liquid air, it will be possible to do away with ice, so far as the kitchen refrigerator is concerned. There are other uses to which liquid air can be put, in the matter of refrigerating, which will readily occur to our readers in tropical climates.

The problem of heating buildings and dwellings during cold weather was solved long ago, but there has never yet been something cheap to produce cool air that would be to the small user in summer an equivalent to fuel in the winter. In the matter of cooling theaters and other large buildings American inventors have devised systems of ventilating and cooling the air which leave nothing to be desired, but the plants required for the purpose are now beyond the limit of the means of the occupants of smaller buildings. Electric fans are excellent in their way, but they do not do much more than agitate the air. No doubt the present efforts at practical progress in the liquid air industry will not only result in furnishing a valuable auxiliary to the present American systems of ventilating and cooling large buildings, but will enable farmers in bucolic districts and householders in cities to acquire the means of cooling their rooms without going to any great expense. Our readers will be duly advised of further developments in the direction of using liquid air for this or any other purpose.

THE UNION AND THE DOMINION.

MIGRATION between the Dominion of Canada and the United States is constantly in progress. Until within recent years the influx of Canadians into the United States has been larger than the outgo of Americans into the Dominion, but now it seems to be upon an equal balance. American firms have established branch factories and a considerable proportion of their help has gone from this country into the friendly territory of our Northern neighbor, in addition to the agriculturists who have been attracted by the homestead privileges which are given by the Dominion to new settlers. The great area of the United States still contains some large unsettled tracts, but these are by no means as attractive to some of our ambitious Americans as are the vast wildernesses of good, cultivatable land which have been left undeveloped in Canada. That the Dominion is making progress in the settlement direction is shown by the figures for the last two years. The number of homesteaders in 1902 was 22,215, who are said to represent 64,968 persons; in 1903 the number was 32,682, representing 90,455 persons. This gain shows that real progress is being made. Meanwhile the great American cities are attracting thousands of bright Canadians, and it is noteworthy that they invariably become quickly imbued

with the onward and upward spirit of the country, making valuable additions to our business world and assuming the duties of citizenship with a vigor born of the vitality of their northern nativity. On the other hand, the Americans who take up their homesteads in Canada are men of the kind who could not, if they would, lose one whit of their faith in American institutions and whose advent into Canada can only cause a greater feeling of friendliness to permeate the relations between the two great English-speaking nations of the North American hemisphere.

The increase in this migration is becoming so noticeable that it is attracting general attention and the trend of sentiment is that the constant exchange of population is making for a closer relationship between the Dominion and the Union—as the United States is called colloquially. We have pointed out in previous issues of THE AMERICAN EXPORTER that closer commercial relations, if not political, are inevitable; but we have maintained that many years must elapse before there can be any serious thought of a union of government. The United States has no desire to abduct one of Great Britain's fair daughters, although this country could hardly refuse protection to such a charming young lady if she were to plead to be annexed. The latter contingency may never happen, although there are devout wishers on both sides of the boundary line. For present purposes we are fully satisfied with the good results to trade and commerce which will ensue from the mixing of the two populations and from the agricultural development of the vast territory which borders upon our own broad expanse of cultivated acreage.

PROBABLY the most important invention which came to public notice last month in America was that of Professor Pupin, of Columbia University, New York City. Dr. Pupin's discovery will not exactly revolutionize things, but it will prove of great importance in reducing the cost of operation of telegraph lines and will therefore cheapen the expense of sending telegraph messages. Anything in this direction is of practical benefit to commerce everywhere, and the description of the discovery published elsewhere in this issue will be read with interest throughout the world.

WE have many times had occasion to refer to the friendliness of the Emperor of Germany toward America and Americans and an account taken from *Leslie's Weekly*, showing how he rebuked some anti-Americans who snubbed the United States Ambassador, gives such a good idea of the real German-American feeling that it is printed elsewhere for the information of our readers in other countries. The action of the Kaiser was thoroughly characteristic of him and no doubt our Berlin friends are sorry that they undertook to slight the American ambassador.

PIG-IRON imports into the United States in the month of May represented but 1,935 tons, while the imports of foreign pig iron, scrap iron, old iron rails, structural iron, steel billets, steel brooms, steel wire rods, scrap steel and old steel rails, which during some months within the past two years have aggregated close on to 100,000 tons, fell to 3,976 tons in May. This great change is due to the increased demand for the exportable products among those mentioned.

CURIOUS stories come from Poldhu, in Cornwall, to the effect that the neighbors of Signor Marconi have come to the conclusion that his wireless telegraph station is a hoodoo. A protracted period of unusually bad weather was attributed by the residents to the work of the wizard of wireless communication. It is fortunate for Marconi that he lives in the present age of progress; his fate not so very many centuries ago would be too awful to call for present discussion of the tortures which might have been applied to him.

ONE interesting feature of our trade with Canada is that the agricultural implement shipments in 1903 were eight times those of 1897, when the first preferential duties went into effect.

THE FAR EAST WAR AND TRADE.

OPERATIONS of considerable importance have been in progress during the last month in the war between Japan and Russia, but the cabled reports have been unsatisfactory and contradictory. The armed conflict, judging by the latest indications, promises to be more protracted and certainly much more sanguinary than the diplomatic negotiations which were preliminary to the war. There is no new feature of the affray itself calling for comment, nor has any sufficiently positive advantage been gained by either country to make it certain which one will prove victorious. Meanwhile the trend of trade toward the Far East takes on a different aspect. It does not seem to decrease, but with almost everything included in the list of contrabands of war, traders engaged in supplying either country with what they chiefly want in the present emergency are living upon doubt and expectation, although not to such an extent as would be the case if Russia had been more fortunate in controlling the sea on the Asiatic coast or if Japan could have offered effective blockade opposition to the importation into Russia in Europe of anything that the Czar's government or subjects might desire to purchase.

Of chief interest to persons engaged in international commerce is the extension of the list of contrabands of war which may be confiscated. One of the incidents of the month was the seizure of a British vessel, but prompt release followed. It is unlikely that either Russia or Japan will try to enforce the war regulations regarding contraband in a way that will involve any other country in the fight that is now in progress. It is some satisfaction to know that the war is apparently likely to be limited to the two Powers now engaged in struggling for supremacy in the Far East, for neither one seems disposed to provoke hostility of any of the neutral powers.

ARTIFICIAL FUEL'S FUTURE.

FROM time to time we have printed accounts of the invention of artificial fuel, a subject in which our foreign readers seem to be much interested, judging by the number of inquiries which we receive from them relating to the matter. Although more than six hundred patents have been granted in the United States to inventors of artificial fuel, and despite the fact that some of the discoveries have been shown by practical tests to be commercially profitable, there does not appear to be the eager rush for the new commodity that might reasonably be expected. This condition is one of the curiosities of modern American development. It is undeniable that the artificial fuel inventors are either slightly behind in the general progress of the age or that they are somewhat ahead of the times in which we live. Either reason would satisfactorily account for the slowness of manufacturers and others in taking advantage of the new artificial fuels, as far as the ordinary observer might be interested.

Without deciding this mooted question it may be said that American inventors and manufacturers have done so much in the way of perfecting their machinery that discoveries of this nature do not attract so much interest as one would ordinarily expect. Cheaper fuel would naturally attract the smaller firms before it would the larger concerns, as the latter make contracts for fuel supplies covering years of time. The smaller firms, however, particularly in cities, do not use fuel direct to any great extent. The perfection attained by American gas, gasoline and hot-air engines, the serviceability of water-pressure motors and of electric motors, to say nothing of the systems which supply steam, the same as gas or water, in some of our large cities, has caused the millions of users of the various sources of power mentioned to depend upon the steam, gas or water that comes through the pipes, or the electricity that comes by wire, to maintain their power machines. There are in New York thousands of manufacturing plants, creating millions of horse-power daily, that never have an ounce of fuel carried into their big establishments. It is a condition that is difficult for persons unfamiliar with our conditions to fully appreciate.

The gas, steam and electric companies use hundreds of thousands of tons of fuel every week to create the products which they supply;

whether for light or heat or power is immaterial. The managers will unquestionably take up artificial fuel when it is shown that its use will tend toward economy, but even then the companies cannot do it until the artificial fuel makers are able to supply the enormous quantities of their product that would be required to feed the capacious furnaces that are kept going every hour of the year. The problem of the introduction of artificial fuel commercially will now be seen to be a greater one than the mere invention of the fuel.

More than a year ago we printed an account of a splendid test of artificial fuel upon an American railroad. The success of the test fully established the worth of the fuel and the railroad could have effected a great saving by adopting it and putting it into general use in its locomotives. The railroad managers were willing enough to do so, but the problem of feeding a thousand locomotives was at that time far beyond the capacity of the inventor. The same condition has been experienced by others. Some of the big railroads own their own coal mines; artificial fuel would scarcely attract the serious attention of the managers of these corporations.

We have not gone into this subject as extensively as we could for the reason that it will interest only a small share of our readers, but we have said enough to show those who are concerned that the inventors of artificial fuel will have considerable difficulty in soon securing profitable recognition. They seem to have brought their ideas to maturity at a bad time, for on the intrinsic merits of some of the new fuels they would have made great hits four or five years ago, but they have a chance of making up for lost time before the end of the decade which has now half passed into history. In accordance with our custom we will keep our readers advised regarding any developments in the artificial fuel industry.

FLAG follows the citizen is a principle of the governing power of the United States that found full exemplification in the recent release of Ion Perdicaris who was held in captivity by bandits in Morocco. The action of our Government in sending our warships to Tangiers involved no excessive display of valor, nor could it be construed as a demonstration of hostility toward our friends upon the borders of the Mediterranean. It was simply an illustration of the promptness of Americans to take an interest in turning wrong into right, even where our own might could only have moral effect. The French Government is entitled to equal credit for its promptness to act in this case of misadventure in one of its outlying possessions.

IN contrast with the strife in the Far East was the scene at Kiel last month when King Edward and Emperor William talked of the peace that makes for progress in Europe and tends to the advancement of international trade and commerce.

JAPAN'S trade with the United States seems to be increasing despite the war, and American Government reports show a gratifying increase despite the conflict in the Far East.

MEXICO is buying American locomotives more extensively than ever. These machines are like all others of our manufacture. They stand the test.

Our Boots and Shoes in Switzerland.—Horace Lee Washington, United States Consul at Geneva, says: "American boots and shoes are increasing in favor. I am convinced that if one of our larger manufacturers would open a store here and in other large cities in Switzerland and sell directly from factory to buyer, as is done in so many instances at home, it would be a successful venture."

American Trolleys in Western Australia.—American equipment will be used in the construction of municipal electric light and traction systems in Fremantle and East Fremantle, Western Australia. The initial installation will cost about \$500,000, and the work is expected to be completed inside of eighteen months.

Our Threshers Abroad.—"A few years ago you couldn't give an American threshing-machine away in many foreign countries, but now they are outstripping the European makes. South America has just begun to realize that we can skin everybody else in machinery of all kinds."—*The American Thresherman*.

SOME WORLD'S FAIR WONDERS.

Interesting Features of the Machinery Exhibit at the American Exposition.

A BIRD'S-EYE view of some of the attractions of the American World's Fair, now in progress at St. Louis, will prove of interest to such of our readers as may not be able to visit this wonderful exposition. For many of them the Palace of Machinery would be the chief attraction. Never has the world seen such an assemblage of machines, never such an installation of power generators. With one glance the visitor may see in operation machines which develop power equal to that of over 50,000 horses, all pulling together. This palace is but one of the thousand structures that make up this greatest of world's expositions. There are more than twenty important exhibit buildings.

The Palace of Agriculture covers twenty acres, the equivalent of a farm under roof. You can walk up and down aisles for miles without recrossing your path and learn a new lesson about agriculture with every step. Other buildings range from eight to fifteen acres each. The four pavilions of the Palace of Art contain a total of 135 galleries, in which will be found the art treasures of every country of the world in which art has made creditable progress.

The Palace of Transportation contains the automobile display, the automobile boats of high speed and other marine craft. The railway display has four miles of display tracks within the building. A monster locomotive with drivers flying at eighty miles an hour occupies a movable turntable in the center of the building.

Two buildings of fourteen acres each are given up to manufactures. The United States Government has an imposing palace on a hillside. It is 800 feet long and is filled with departmental exhibits. A half section of a man-of-war is one of the many features. The Government Indian exhibit and fisheries exhibit occupy other buildings. Many acres are occupied with outdoor exhibits.

Fifty nations of the world and fifty States and Territories of the United States are active participants in the great exposition. Magnificent buildings on every hand give outward expression of their presence, and in many palaces are the displays of natural and manufactured products from lands far and near.

It but mildly tells the story when one says the Pike (or Midway) is more than a mile long, for in that measured length are immeasurable possibilities for pleasure of most novel kind. There are trips to the most wonderful places and back again in a twinkling. There are delightful mysteries and thrilling scenes, villages and streets from many nations, scientific wonders and spectacular shows.

But the reader would like to go back to the Palace of Machinery and the power plant. Alluring things are everywhere, but the power plant is a marvelous thing if we but study its details. The palace is 1,000 feet long and 500 feet wide. It covers ten acres. The power generators are in the western part of the building and receive their steam from a huge boiler plant in another great building near by. These engines require the equivalent of 400 tons of coal per day to supply the steam.

The public has never seen a steam turbine, the dream of mechanics since the first application of the force of steam. The dream has come true. Thought and experiment have won at last the success that has baffled many an inventor now dead. So recent is the invention of the successful steam turbine that no exposition has before offered an opportunity for its public display. At the World's Fair in St. Louis can be seen, not one, but three, types of successful steam turbines, all related, yet as inventions quite distinct.

When steam is released under pressure of 150 pounds to the square inch in the ordinary atmosphere, it has a velocity of nearly 3,000 feet—almost three-fifths of a mile—per second. Projectiles from big cannon or Mauser rifles do not travel so fast. When steam under the same pressure is released into vacuum the velocity is over 4,000 feet per second. Here was the basic idea. To release live steam at such tremendous velocity against revolving parts of small diameter would now seem the height of folly, but inventors for nearly a hundred years hadn't thought so. Waste of energy and efficiency could be the only result. How easy to see it now!

Three inventors share the honor of making a successful steam turbine. They are entitled to a place in a list of honored names—Carl de Laval, of Sweden; the Hon. Charles Algernon Parsons, of England; C. G. Curtis, of New York. Three countries share the distinction, and it is better thus, for this is no narrow world.

In the De Laval turbine the steam is discharged from the boiler through an expanding nozzle upon a set of vanes upon a single wheel. Good efficiency is secured, but the rotation of the wheel is so swift that its velocity is reduced ten to one before it is applicable to power uses. This is done by means of spiral-cut gears.

The Parsons turbine is the one which is now in practical use on the English Channel propelling the steamer Queen, a vessel 310 feet long, at twenty-three knots per hour. In the Parsons turbine the steam is carried between a succession of internal revolving cylinders and external stationary cylinder. Both the internal and external surfaces of these cylinders are equipped with circles of vanes and blades, so arranged that the steam passes alternately through rows of moving and stationary blades. The impact of the steam is deflected from the stationary to the moving blades and imparts the movement to the cylinders fixed upon the shaft. The turbine engines take

but little space, as compared with ordinary engines, and the noise is like that of a rapid-running dynamo. The absence of the unpleasant vibrations common to steamers having a reciprocating engine is at once noticeable. The Parsons turbine exhibited at the World's Fair is a 5,000-horse-power engine.

In the Curtis turbine the inventor has profited by the experience of his predecessors. The first patent by Mr. Curtis for the protection of his ideas in the construction of the steam turbine was issued nine years ago—in 1895. The development has been going on since that time. The engine for the World's Fair power plant is an 8,000-horse-power turbine, with an electric generator direct attached, the most powerful engine ever built for any purpose, and is guaranteed to deliver as high as 12,000 horse-power, or the equivalent of the entire amount of power used at the Columbian Exposition at Chicago ten years ago.

The construction of the Curtis turbine is, in some respects, similar to that of the Parsons, with the very important difference that the inventor has vastly enlarged the diameter of the revolving parts. The revolving mechanism of the Curtis engine consists of a series of disks strung upon a shaft. These disks alternate with fixed disks attached to the inner surface of the cylinder in which the parts revolve. The steam is admitted through a series of expanding nozzles around the entire circumference of the revolving disks. There may be as many blade disks as necessary to use almost the entire efficiency of the steam. As no oil enters the steam chamber the condensed steam is in a condition to be returned immediately to the boiler.

Aside from the Curtis turbine, the largest engine in the 50,000-horse-power plant is the Ellis-Chalmers reciprocating engine of 5,000 horse-power, valued at \$150,000. One needs to recall the great Corliss engine which attracted such world-wide attention at the Philadelphia Centennial Exposition. That ponderous engine never developed to exceed 300 horse-power. The Allis-Chalmers engine is equivalent to nearly eighteen of the Corliss generators. The construction of this largest of reciprocating engines differs from those familiar to most eyes, in the fact that it is both a vertical and a horizontal engine, having two pistons acting upon the same crank.

Other noteworthy engines in the great power plant are a 1,750-horse-power engine from Tedel, Germany; a 600-horse-power, high-speed engine from Harrisburg, U. S. A.; a 750-horse-power, medium-speed steam engine from Cincinnati, U. S. A.; a 1,000-horse-power slow-speed steam engine from Burlington, U. S. A.; four 3,000-horse-power reciprocating steam engines, with generators, from Pittsburg, U. S. A.; three 80-horse-power exciter sets, and many other engines of smaller rating.

The Steam, Gas and Fuels Building is a fireproof structure 330 feet long by 300 feet wide, a short distance west of the Palace of Machinery. A tunnel 17 feet broad by 8 feet deep connects the two buildings. One of the steam pipes conveying steam to the engines of the power plant is 18 inches in diameter; another is 16 inches, and none less than 10 inches. The many boilers in the building when at full load will evaporate 700,000 pounds of water per hour, or 350 tons. Huge condensers will change it again to water, when it will be returned to the boilers. The great power developed here is to be used in the operation of the electric railway within the grounds, the pumping of water and the illumination of the grounds and buildings. The value of the exhibits in the Palace of Machinery alone will exceed \$8,000,000, while the cost of the Exposition, exclusive of exhibits, is estimated at \$50,000,000.

Some Japanese Are in America to Learn.

AN incident at the American World's Fair last month shows that the Japanese are here to learn—and are evidently learning. The representative of the Imperial Railroad of Japan went through the Transportation Building the other day. He stopped at an exhibit of an American manufacturer of car wheels.

"Japan uses cast-iron wheels, the same as you do here," volunteered the Oriental, "although the majority of foreign countries forbid cast-iron wheels."

"You are safe," remarked the man in charge of the exhibit.

"I should like to have a sample of your car wheels," said the Japanese.

"Why, certainly," remarked the man.

"If it is not too much bother I would also like the formula of the mixture for these wheels," remarked the Japanese, casually.

"Oh, we can't give you that," returned the man with a laugh.

The official smiled and went away, and the next day he showed up again.

"We can't duplicate your wheels in our country," declared the Japanese railroad man, "for you make your wheels with Missouri iron. We might import your iron, but that would cost as much as to buy your wheels and have them shipped to us."

"How do you know all that?" demanded the exhibitor.

"I analyzed the sample you gave me," answered the Japanese.

Need of Care on the Part of Purchasers.—The *American Woodworker* says: "If purchasers would take greater care in setting new machines and observe more carefully the directions of the machine builders, there would be fewer 'kicks' to the builders and fewer sore spots among purchasers." This applies to the whole world. Good machines may sometimes not do the work expected of them through carelessness in putting them up. American machinery is built with due allowance for such carelessness, but, like that made anywhere, it gives the best results when properly treated.

Our Agricultural Machines in South Africa.

IRA A. SNYDER sends to the *Farm Implement News* from Port Elizabeth, South Africa, an interesting letter regarding the implement exhibition and plowing match recently held there, from which these extracts are made: "Notwithstanding the fact that the British implement manufacturers monopolize the trade papers in proclaiming the adaptability of their goods to the colonial trade and work on the patriotic sentiment of the dealers, the agricultural show at this place, April 7th and 8th, would have been a failure had it not been for the progressive firms who exhibited American machines in a manner which would have made the manufacturers feel proud of them.

"A large structural steel machinery shed about 500 feet long was filled to overflowing with implements of the smaller class, such as plows, pumps, feed-cutters, corn-shellers, grinding-mills, etc., and in some instances a large variety was exhibited outside. Hay-presses and windmills were much in evidence, and practically all were of American make. They were in operation.

"Windmills, fifteen in number, were clustered around a large reservoir and pumped water into it in streams varying in size from a candlestick to a water-main. This exhibit was unique and attractive. The dealers deserve great praise for their efforts in this line, as the exhibition is generally conceded to have been the most instructive display of wind-engines ever given in South Africa.

"Most of the dealers here are very progressive and readily adopt new ideas to suit the needs of the farmers. This was especially noticeable in the exhibition of disk plows and the predominating display of soft-center flint-steel plows, which the European manufacturers fail to produce in any creditable quality. One firm exhibited seed-drills and found a ready sale for them. However, most of the dealers do not understand the value of seed-drilling machinery. They believe the country is not sufficiently developed for the use of same, but the colonial farmer takes readily to labor-saving machinery, and its value need only be demonstrated to him, and he buys then and there.

"The one thing lacking in the show was a good exhibition of threshing-machines. Several cumbersome English outfits were shown, but the American thresher of the same size has double the capacity and is much easier to repair on account of the parts being readily duplicated. Perhaps the cause of the small demand for American engines here is that the people do not understand our high-pressure boilers. It is reported in various sections that the Government inspectors are condemning them as unsafe. Instances are reported where American boilers were limited to 110 pounds pressure. The work required 140 pounds and the boilers were guaranteed by the manufacturers to stand 200 pounds. Such discriminations will eventually lead to a test and prove either the inefficiency of the inspectors or a scheme not altogether honorable."

Our Agricultural Implement Exports.

AMERICA'S exports of agricultural implements have made satisfactory progress. Our implements have contributed to the development of the world's agricultural districts more than ever before in the last two years. In the American official fiscal year ended June 30th a gain of \$9,000,000 worth was reported, with a total of exports in this line for the year of \$25,000,000. That sum will buy a great quantity of plows, thrashing-machines and other implements used for tilling the soil. As American manufacturers figure on making their products durable, as well as reasonable in price, this big sum means practically new business. The implements sold one, two or three years ago, perhaps longer, are still in active use. Some facts about the growth and present trend of the trade are interesting.

The earliest year in which the value of agricultural implements exported was of sufficient importance to justify a separate statement was 1864. In that year the total value of agricultural implements exported was \$611,152. In 1870 the total was \$1,000,000, speaking in round figures; in 1880, \$2,500,000; in 1890, \$3,750,000; in 1900, \$16,000,000. Comparing this year's exports with those of a decade earlier, the figures in 1904 are practically five times as great as in 1894, the total for 1894 being \$5,027,915.

Comparing the growth in exports of agricultural implements with that in other articles during the same period, it may be said that cars and carriages have increased from 3 1-3 million dollars in 1894 to a probable \$12,000,000 in 1904; chemicals, from nearly \$7,500,000 in 1894 to a probable \$14,500,000 in 1904; scientific instruments, from \$1,500,000 in 1894 to \$8,000,000 in 1904, and manufactures of leather, from \$14,000,000 in 1894 to approximately \$33,000,000 in 1904, while agricultural implements have increased from \$5,000,000 in 1894 to a probable \$25,000,000 in 1904.

The principal foreign markets for American agricultural implements are shown in a table just prepared by the Department of Commerce and Labor, through its bureau of statistics. It shows that of the \$19,000,000 worth of agricultural implements exported from the United States during the ten months, for which detailed figures are available, nearly \$10,000,000 went to Europe, \$4,000,000 to South America, \$3,000,000 to North America, \$1,500,000 to Asia and Oceania, and a little over \$500,000 worth to Africa.

Considering the exports by specific countries, Argentina is, in 1904, the largest customer, the exports thereto in the ten months of 1904 being \$3,592,010, against \$2,500,000 in the same months of the preceding year, and \$1,750,000 in the corresponding months of 1902. Next in magnitude is Russia, our exports to that country in the ten months ending with April, 1904, being valued at \$3,133,442, a decrease of about \$300,000, as compared with the corresponding period of last year. France stands third, the exports of agricul-

tural implements to that country in the ten months under consideration being \$2,513,061, an increase of nearly \$500,000 over the same months of 1903.

The other countries to which the exports of agricultural implements reached a total of \$1,000,000 or upward in the ten months' period are, in the order named: United Kingdom, \$1,383,978; Germany, \$1,245,233, and British Australasia, \$1,226,271, each of these countries showing a substantial increase over the exportations of last year.

Mowers and reapers contribute about one-half of the total exportations of agricultural implements from the United States, while plows and cultivators supply about one-sixth of the total, the remainder being made up of miscellaneous tools and implements grouped under the general term, "all other agricultural implements and parts of."

Exports of mowers and reapers have steadily increased, having grown from \$2,372,638 in 1892 to \$8,818,370 in 1902, \$10,326,641 in 1903, and in the fiscal year 1904 will amount to about \$13,000,000. Exports of plows and cultivators have also rapidly increased, having grown from \$397,735 in value in 1892 to \$2,791,092 in 1902 and \$3,169,961 in 1903, and will be fully \$3,500,000 during the present year.

Other agricultural implements have increased from \$1,024,310 in 1892 to \$4,677,278 in 1902, \$7,510,020 in 1903, and a probable \$8,500,000 in 1904.

Our Growing Foreign Implement Trade.

THE popularity of American agricultural implements in foreign countries continues unabated. Exports are constantly increasing, not only to countries which admit American machines on equal terms with others, but to those which impose higher tariffs on our implements. There is, of course, no doubt that the exports to countries which have discriminating tariffs would be much larger if American machines were admitted on the same basis with others, but the fact that our exports are increasing to such countries, in spite of the tariff, is the strongest possible testimony in favor of the machines.

During the first eight months of the fiscal year there was a gain of \$2,500,000 in the exports of implements, and during the first two months of the calendar year of 1904 there was an increase of \$500,000. It is worthy of note that the shipments of mowers and reapers constitute a smaller percentage of the total than ever before. In the first eight months of the fiscal year of 1902 mowers and reapers constituted 52½ per cent.; plows and cultivators, 17½ per cent., and all others, 30 per cent. of the total. This year mowers and reapers constitute only 42 per cent., while plows and cultivators have increased to 19 per cent., and all others to 39 per cent.

The shipments to British North America show a decline of about \$300,000 during the eight-months period, as compared with last year. This decline was not unexpected, since so many United States manufacturing concerns have established branch plants over the line and are supplying their Canadian trade to a large extent from these establishments. One of the most remarkable features of the last official report is the increase in the exports to Argentina, amounting to \$1,200,000, a gain of 50 per cent. over the same period of last year.—*Farm Implement News*.

Chances for Cotton-Growing in Australia.

UNITED STATES CONSUL GODING, at Newcastle, New South Wales, recently made a report, from which these extracts are taken:

"The question has frequently been asked, 'Can cotton be grown at a profit in Australia?' Cotton-growing was a success in Queensland, in 1867-1872, in East and West Morton and the region of all the tributary rivers emptying into Morton Bay. At the height of the cotton industry in Queensland—about 1870—the area under cultivation was very large, the export of the product reaching 4,000 bales.

"In New South Wales, in 1898-1899, the cotton expert of the State made some experiments in cotton-growing on the State experimental farm at Moonbi, 200 miles north of Newcastle, where two acres were planted in cotton. The growing season was one not only of extraordinary drought, but of high winds during the first three months of the crop year. Upland cultivated crops throughout the district were entire failures, with very few exceptions, yet the cotton under cultivation held its own with lucern in remaining green and continued to grow when all other vegetation was at a standstill. This experiment satisfied the expert that lint cotton of excellent type and quality may be grown in New South Wales."

With the use of American machinery for the cultivation of cotton it is evident that the industry could be made one of importance to Australia.

American Wagons in the Far East.—An order for 1,000 army wagons for the Russian military service in the Far East has just been filled by a Minnesota (U. S. A.) factory. Most of the vehicles were of the new six-wheel type, built to carry five tons, and equipped with a brake crank, whereby soldiers may, in a hilly country, stop the heavy wagons almost instantly on a down grade.

Our Trade in the Dominican Republic.—Minister W. F. Powell writes from Santo Domingo that importations from the United States into the Republic have increased more than 25 per cent. during the past ten years in certain classes of textile goods. Americans have almost complete control of the market for shoes, having supplanted the French in the sale of this article.

A MASTERFUL AMERICAN.

Something About George Westinghouse, Whose Enterprises Are International in Scope.

WHILE some other American inventors have held the center of the stage of publicity it has been left to Arthur Warren, an accomplished writer upon industrial and other subjects, to paint a pen picture of an American whose enterprises are international. George Westinghouse is one of the modest men of our country. He is a man who *does* things, but does not talk about his achievements. From Mr. Warren's story in the *New York Times* these extracts are made:

"A big man, with 100,000 horse-power inside him; a masterful man, with 25,000 men directly under his leadership; a man who controls whatever he touches; an absolute ruler, as absolute as the Czar. George Westinghouse is a trained engineer, an inventor, a manufacturer and a financier. The combination is unique.

"Other men have won high places in commerce and industry, have been, and are, great forces. But they have not worked in his single-handed fashion. They have had strong partners, they have surrounded themselves with men of money. But this man has no partners, and you do not hear his name associated with groups of assistant multimillionaires. He stands apart like a tower that draws all attention to itself by its altitude, its proportions and position.

"All his interests, it is true, are in company form, incorporated; but he controls the companies and his word is the law that governs their energies. These organizations afford the most conspicuous example of one-man power in the industrial world to-day. They are not American enterprises only; they are international. There are nine manufacturing companies of his in the United States, one in Canada and five in Europe—two of the latter being in England, one in France, one in Germany and one in Russia. In New York there is also a great company of contracting engineers. In Pittsburg there is a financial company, and in London another. The manufacturing companies divide the world between them as the market for their output. In every considerable city you will find their officers or their agents. This business system is imperial in plan and operation. It is a world-encircling empire with an absolute monarch at its head.

"Stephenson taught us how to move a railway train; Westinghouse taught us how to control its movements, and he made modern railway traffic possible. We could not travel at the speed we do, nor operate the long and heavy trains, without being able to regulate their movements perfectly and instantly. The Westinghouse brake is the device by which the end is gained. Wherever there are railways you will find this brake."

The air-brake invention has been known for so long a time that one encounters many persons who think it must have been invented by this man's father. But the inventor was none other than the renowned American, who is to-day at the height of his activities, 58 or 59 years young.

In 1885 or 1886 our masterful American organized the Westinghouse Electric Company, which has outgrown all his other undertakings. In Europe experiments with the alternating current were attracting expert attention. He purchased the patent rights for America. He brought Tesla to Pittsburg and backed him in his researches. The induction motor was a result. He bought Tesla's patents and immediately began to develop alternating current machines for commercial purposes.

Everybody said he was reckless. That didn't matter. Then they tried to stop him. He increased his efforts. Experts, competitors, scientific men, at home and abroad, prophesied failure. As he didn't fail, they filled the air with cries of "public danger." Prohibitive legislation was invoked in a dozen States (or were they twenty-two?) on the ground that by the use of the alternating current the risk to human life and to property would be so great that the system should be forbidden by law. But Westinghouse went on and succeeded; the opposition spluttered and died, and for years past the great developments in electrical work have been through the alternating current system.

He organized an engine-building company, built steam engines, gas-engines, and was the first man in the United States to undertake seriously the development of the steam turbine. He acquired the Parsons turbine patents for America. He organized an incandescent lamp company, the Nernst Lamp Company and a company for manufacturing the Cooper-Hewitt lamp. He will organize a company without more ado than another man will make over eating his breakfast. He has been known at the breakfast table to buy a copper mine, send a man to Europe to investigate a newly announced electrical discovery, and give instructions for a series of experiments to be made in some entirely new direction.

"A big man with 100,000 horse-power inside him," says Mr. Warren. "He has more physical endurance than any ten of the 25,000 men in his employ. He is always working, except when he sleeps, and he is a good sleeper. When one thing is accomplished another is begun. The successes do not chain his interest. Achievement attracts him, so he is ever doing some new thing, and thus his undertakings multiply. Once, when he sold a property at a price that would have been a snug fortune for another man, I heard him say: 'This will give me a little ready cash to conduct such-and-such experiments.' He probably has expended a quarter of a million on these experiments, and one of these days a new industry will spring from them."

The writer describes him as a typical American—one of the men who make two blades of grass grow where one or none has grown before. It is "playing

the game" that interests him. He is not one of the millionaires who keep yachts, racing stables, automobiles and picture galleries; he does not gamble, he does not smoke and never plays second fiddle in any orchestra. He always conducts. What he cannot control he will not touch. Amalgamations, consolidations, are not for him unless he is to be ruler of them. He takes quick likings and strong dislikes, and his ambition is to extend his great industries to many countries, to build them up there, so that they become, as it were, national institutions, and to have their products on every sea and in every land.

He is not far from realizing this ambition. Already the British Westinghouse Electric and Manufacturing Company is the greatest of its kind in the United Kingdom and has become in two or three years the most widely known industrial undertaking in the British Empire. On the Continent of Europe he has three manufacturing companies. The commercial territory of one of them extends from St. Petersburg to the Pacific. His foresight planned those companies, and his energy got them working before the countries in which they are placed could seriously oppose the import of American manufactures by a wall of prohibitive tariffs. Let them have tariffs now if they choose. These European industries of his are European, employing the capital and the labor of the countries where they are planted. The conception and the execution of this plan were Napoleonic.

The manner in which his British company was started was characteristic of the man. Anybody else would have begun over there in a comparatively small way. But he began there on a grand, even a gigantic, scale, everything about it entirely new. New works were erected at Manchester large enough to employ thousands of men at the start; there were 6,500 men on the payroll in the month of September last. All the machinery was new and specially made for this establishment. Four thousand men were required to build the works. Add the thousands who are daily employed inside—in the foundries, the electric works, the engine works, the draughting-rooms, the offices—and think what all this means to the earning power of Manchester, the sums distributed weekly in wages and paid out for material and supplies! Is it strange that Europe should welcome a man at whose word industries spring up like this, full-fledged?

Self-reliance is developed in George Westinghouse to an extent unusual even among those types of men we call born leaders. That fact gives the clue to his successes and his methods. He can do himself so many things that other men require trained assistance to bring forth. He lost an important suit after a hard fight, but within a few days he invented a device which fulfilled the requirements. Many a time in his career opponents have thought they had him in a corner, but he always broke through and gained abundant elbow room.

"Trade Follows Advertisements as Well as the Flag."

THE *Canadian Manufacturer* prints a paper from George Johnston, the Dominion statistician, prepared for the information of the Duke of Argyle, showing the effects of the tariff preference given by Canada to Great Britain. He claims that it has resulted to the advantage of both. Referring to the United States, he says: "It has the advantage of closer proximity to our markets and a thorough knowledge of our trade requirements. The United States also has an advantage in the fact that we must go there for certain raw products, such as cotton, and therefore having to go for some things we are more likely, once being there, to buy other things. We have on several occasions broken down a persistent attempt to destroy some particular branch of our industries by increasing the duty and threatening to go higher still, if necessary. Whether, on the whole, the United States has succeeded in causing the British manufacturer to sell to Canada at a lower rate than to other customers, I do not know; but when the United States maker has to meet British goods which pay a duty of 19 per cent. while he has a duty of over 28 per cent. against him he must feel that his geographical advantages are largely offset, and that under the preferential tariff he and his friend, the British manufacturer, are more nearly on an equality as competitors for Canadian trade than they ever were before.

"There is one subject which is intimately connected with the development of trade to which, however, your Government does not appear to attach as much importance as I do. Your newspapers do not circulate in Canada. The United States newspapers do. 'Trade,' we say, 'follows the flag.' It is even more true that trade follows the advertisements of the newspapers."

This Machine Handles Coal by the Ton.

THE apparatus that can bite up five tons of coal is known as an automatic grab-bucket. It was invented not long ago. The Carnegie Steel Company owns it, and its function in the world of work is to insert its great jaw into places wherefrom vast quantities of ore are to be removed. For instance, when placed alongside a laden steamship, it can gobble up and redeposit on dry land about 2,000 tons an hour.

Every day sees some new labor-saving or time-saving invention in the way of machinery for handling materials in bulk. This five-ton biter or grab-bucket measures 15 feet over all when its jaws are wide open. A three-ton biter measures 11 feet. They are something like great pairs of claws and their mechanism is so perfect that no supplemental shoveling up is necessary after they have finished unloading a vessel's hold.

RAILWAY TRAINS WITH WINGS.

American Inventor Expects to Travel 240 Miles an Hour with Aeroplanes' Aid.

CHARLES E. REEVE, an attorney and expert mechanic of Chicago, U. S. A., has evolved an idea which he believes will result in trains being able to travel at a speed of 240 miles an hour on "modern rapid-transit" railways, with overhead structures and suspended cars. It was his work on the airship problem that led to Mr. Reeve's discovery of his proposed system. Indeed, his patented locomotive car and track system are simply an application of the airship principle to the operation of the modern railroad systems on elevated railroad tracks. But instead of running the trains on top of the tracks Mr. Reeve suspends the trains from the tracks. The cars will run on wheels revolving at the top instead of at the bottom, as at present. The wheels will rest on overhead rails, which they cannot leave or "jump," no matter what sort of collision or other accident may happen. Perfect safety in travel combined with a minimum speed four times as great as that of the fastest trains of to-day will thus be attained.

Except that the wheels of the trains will be on the top, not the bottom of the cars, the make-up and general appearance of the "modern rapid-transit flyers" will in no way differ from the appearance and size of the present trains in which the traveling public are carried both on the surface and elevated railroads in city, State and nation.

The most unique as well as the most startling feature of the invention is Mr. Reeve's application of the aeroplane device to overcome friction and make the very highest degree of speed both safe and possible. By means of these aeroplane contrivances—which will have the function of wings—he intends to make the atmosphere do most of the work now done by the wheels and rails when a train is moving. In other words, the fear of overheating from friction will be overcome, as the journals and bearings of the Reeve wheels will undergo no more wear and tear nor do any more work when the train is going at a rate of 240 miles an hour than they do when going at a slow rate of speed or simply are standing still.

"In our improved car," says the inventor in a prospectus that he has just issued in connection with the work of promoting his plan toward the practical success that he foresees for it, "we have made the driving-wheels $3\frac{1}{2}$ feet in diameter, so that if we give them the same number of revolutions as the German suspended electric cars ours will be driven eight miles per minute; besides, the bearing of our wheels need not sustain the weight of the car. We have provided our cars with a system of aeroplanes or thin sheets of metal which cut the air at a slight angle, so when the car is in motion there is a continual upward pressure by the air on the planes, thus sustaining the weight of the car and taking that weight off the track.

"Therefore, our elevated structure need only be strong enough to hold up the rails, so that we have something solid to push against to drive the car forward; and having taken the weight off our journals we can successfully use ball-bearings and thus remove all possible danger of overheating the journals even at a speed of ten miles per minute.

"But, about the possibility of accident, how can we produce absolute safety? Simply by eliminating the elements of danger. In 298 railroad accidents out of 300 the deaths and injuries were either caused directly or were multiplied by the cars leaving the rails. We have the block system and the interlocking switch to prevent collisions; but what have we to prevent the car leaving the track? Nothing at all except simply the weight of the car.

"We have become so used to it that many of us have never realized the awful danger of riding on a rapidly moving railroad train and trusting to luck to remain on the track. Has the thought ever come to you while flying along over a track that the only thing between you and eternity is one little inch and a quarter flange on one edge of the wheel, and that a pebble or any little obstruction on the rail that will raise one wheel an inch and a quarter will cause the train to leave the track, taking you into eternity?

"Our modern rapid-transit cars cannot leave the track. They are provided with driving-wheels engaging the upper edge of the rail, and these are geared with other driving-wheels that engage the lower edge of the rail and both have flanges on the outer side of the rail, and guard flanges on the inner side of the rail, so that from the time the cars are constructed until they are absolutely worn out and sent to the scrap heap they can never leave the rail."

Explaining his system, Mr. Reeve said: "A railroad that now costs \$20,000,000 to build and equip can be built and put in readiness for operation under my system for \$1,000,000. It is my firm belief that my system will revolutionize railroading. To have the wheels at the top, not at the bottom, is the only safe way to operate trains. Although our aeroplanes will sail along over the trains like so many mammoth Gainsborough hats on the heads of women, there will not be any serious objection to the planes on the score of cutting off light or air from the public. For it is possible to have the aeroplanes made of transparent material if necessary.

"True, the aeroplanes will be about three times as broad as the width across the tops of the cars of trains as the cars are at present built. But no inconvenience will on that account be experienced, as the chief purpose of our system will be to afford not so much the facilities of municipal or urban rapid transit, but rapid transit across the continent. It is our hope to do more in annihilating magnificent distances than short distances. In other words, our great aim will be transcontinental rapid transit."

New Novelties in American Hotels.

SOMETHING new is constantly sought in America and the novelties that develop take odd forms. The proprietor of one of the new hotels intends to provide for the use of his regular patrons individual knives, spoons, forks, cups, drinking-glasses, napkins and towels. There will be no extra charge, and each article will bear the initials of the guest. The only consideration is that the user shall agree to take lodgings for one month or longer.

"Isn't it a good idea?" he asked of a reporter of the *New York Sun*. "My ware is all quadruple plate. To cut an initial or monogram will cost practically nothing. It will be cut very light, so that after a month's use or such matter, it can be removed and a new one cut in its place.

"For whole families of five to ten people it will be necessary to provide complete sets of ware, glasses, cups, etc. I shall not be stingy. To etch glass nowadays is so inexpensive that the extra cost would not be noticed. Suppose I have a single guest's monogram cut on half a dozen of each kind, the chances are all will be broken by the end of his stay.

"If families living in the hotel insist on it, I shall have complete sets of dishes for them also monogrammed. If fifty such families were staying with me I would try to have fifty different designs of plates and dishes in fifty different colors or tints, so that they could be easily distinguished.

"It is not necessary to burn a monogram into china nowadays. There is a preparation that is applied with a rubber stamp just as easily as you stamp a signature. The stamp is not indelible, but comes off only in scalding water. A boy at \$4 a week could stamp fresh every day all the sets of china I'd be likely to use.

"There is a new style of marking silver that I guess you haven't seen, either. It's done with a rubber die and looks like the finest enamel. I'm going to try it on my knives, forks and spoons. They tell me it is better than engraving where it isn't wanted to last forever. One application, well baked in an ordinary oven for two hours, will last, I am told, ten to twelve days.

"One of my rivals in Chicago a few years ago tried to introduce the paper napkin. He had some very delicate ones made with the stamped monogram of the hotel thereon, but the people wouldn't have them. There's a free-lunch style about a paper napkin that we haven't been able as yet to overcome.

"A paper manufacturer showed me the other day some material for napkins that is as soft as velvet, as white as snow, as absorbent as blotting-paper and sufficiently tough to answer all purposes. Why, it's pretty enough to make your wife a summer dress out of. And it's paper—only paper.

"Now, I'd like nothing better than to put some napkins made out of that stuff on my tables, but I haven't the courage. It is, however, only a matter of time when all tablecloths and napkins in hotels will be made of paper, and hotel towels, too."

Well-Borers and Windmills Needed in Greece.

UNITED STATES CONSUL D. E. MCGINLEY, at Athens, Greece, urges the exportation to Greece of American well-boring machines and windmills together, because the situation requires that the two machines should enter it hand in hand, as it were, as the best and surest means of giving the valleys of Greece what they most need—a sufficient supply of water for irrigation. He adds: "The introduction of the two kinds of apparatus will be a revelation to the peasants and to the residents of the cities as well. The introduction of the well-boring machine will add greatly to the demand for windmills, as the model of digging wells in general use here is both slow and costly—costly even with the very cheap apparatus and labor used. And the introduction of windmills will create a demand for more and better wells." Consul McGinley advises that experienced men be sent along to show how the machinery operates, and says by way of explanation: "In a land like this where machinery of any kind, except the most primitive, was unknown to the peasants until within the last few years, it cannot be expected that the peasant will take hold of a well-boring machine or a windmill and operate it as successfully as does the average American farmer; and it is not so many years ago that the average farmer of the United States was not very expert in the use of new-fangled machines."

Vehicles on Water Skates Are Impracticable.

FROM Germany comes a proposition that wheels shall be displaced by runners, or slippers, in all transportation vehicles. The cars are raised on a thin film of water, which is forced under the skates, through a jet. In the earlier plans the propelling force contemplated was a horizontal jet of water, which was directed against suitable vanes on the bottom of the cars. The valves of these jets were opened by the leading car and closed by the rear car. In the plan, as now proposed, a third rail is laid between the two gliding rails and a friction wheel, driven by electric motors, runs on this and furnishes the propelling force. The advantages claimed for this system of traction are great reduction in the track resistance and in the power required by a car, a much smoother running of the car, and hence a smaller depreciation both of track and car. There is said to be no danger of derailling the car and high speed can be attained. By cutting off the water supplied under the skates breaking up the car is effected. An attempt in this direction was made in America some years ago, but was found to be impracticable. The storage of sufficient water to use in operating the vehicles was a problem that could not be overcome.

MICHAEL'S LAWN SPECIALTIES

Have been on the market over 46 years,
and have successfully stood the test of time.

Our Motto Is: **QUALITY** in Every Instance.



New Michael Lawn Swing.

For grace, solidity and beauty the New Michael Four-Passenger Adult Lawn Swing has no equal. All parts are bolted or screwed. We use no nails except in chair slats. No tools required in setting up. We guarantee the New Michael Four-Passenger Adult Lawn Swing to be the best made. Opens and closes like a jack-knife. Contains about 20 cubic feet each, and weighs, each, 150 lbs.

Price, per half dozen.....\$30.50



Michael's Folding Rocker.

Is the neatest and best article ever placed before the people. Folds as shown in cut. Painted red or green, or natural wood finish.

Six Folding Rockers, crated, containing about 14 cubic feet; weight, 48 lbs.

Price, per dozen..... \$9.00



Michael's Lawn Settees and Folding Chairs.

Our Lawn Settees and Folding Chairs are the most practical ever placed upon the market. The curve in back is exactly right. Painted red or green, or natural hardwood finish. Six 5-foot Settees, crated, containing about 25 cubic feet; weight, 96 lbs.

Price, per dozen.....\$18.00

Six Folding Chairs, crated, containing about 14 cubic feet; weight, 30 lbs.

Price, per dozen..... \$6.00

NOTE.—The prices above quoted are f. o. b. New York City.

We also make the Michael Porch and Lawn Reclining Chair.

C. H. MICHAEL MFG. COMPANY,

Cable Address, "Michael," Western Union Code.

LA PORTE, - INDIANA, U. S. A.

MILLING CUTTERS

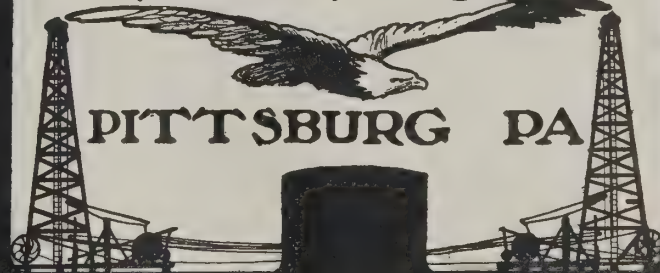


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**NATIONAL
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FOR

**OIL AND GAS
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**Derricks and Rig Irons,
Boilers and Engines,
Drive Pipe Casing and Tubing,
Drilling and Fishing Tools,
Manila and Wire Rope,
Pipe Line Supplies.**

We furnish Complete Outfits ready for drilling.

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FOREIGN DEPARTMENT OFFICES:

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American Goods Popular in France.

A WRITER in *Leslie's Weekly* contributes to current information a remarkably interesting article, from which the following extracts are made: "In Nice," he says, "I rode in American trolley cars over American rails, this electric traction system being operated by an American concern. At Limoges I visited outlying farms that were operated entirely by American farm machinery and dairies similarly equipped. At Nice the people drove to Monte Carlo in American carriages, the horses wearing American harness. At Liège American shotguns and rifles were shown to me in three different shops. At Lyons, where I visited the great silk mills, I found the workmen making packing-boxes—the very boxes in which silks are packed for shipment to New York—of American planed boards. In every factory I found American labor-saving tools, and in half the offices I saw American typewriters. At all ports I watched the unloading of cargoes of American coal, and a French merchant told me that his countrymen are convinced that the United States is about to supplant Great Britain in the European coal markets as the chief purveyor of that fuel. On the railroad on which I traveled from Paris to Orleans, American coal was used exclusively. In Paris I saw no end of American bicycles, and many of the French cycles were equipped with American tires. At my Paris hotel I noticed that the window fastenings and door handles were supplied by a firm in Connecticut. In a little hotel in Dijon I was served with sweet potatoes from North Carolina, these being actually among the first sweet potatoes used in France. Refrigerated American beef could be had in any first-class restaurant. The elevator that carried me upstairs at the hotel in Paris was from a New York maker, and the electric fans in the dining-room were imported from that self-same American city.

"To get at the real reason of our success in France we must understand that it is not *because* of conditions, but *despite* them. As a matter of fact, every single article coming into France from America, excepting the few articles included in the reciprocity treaty of 1898, is charged the maximum tariff rate. In other words, enormous duties are levied on American articles in contradistinction to the more favored nations, so that every commercial nation, except the United States, obtains the benefit of the minimum tariff rates of France. How, then, do we manage to get such a foothold? Here is the answer in a nutshell: First, we supply a better grade of goods at a lower cost than French manufacturers can meet, and behind that still is the prevailing fad."

Steady Growth of Our Exports Into Canada.

EXPORTS from the United States to Canada were larger in the fiscal year just ended than in any preceding year. Reports prepared by the Department of Commerce and Labor, through its Bureau of Statistics, show for the ten months for which figures are already received, total exports to Canada amounting to \$104,000,000, against \$98,000,000 in the corresponding months of 1903, and \$89,000,000 in the same months of 1902.

Going back to 1897, the year in which the Canadian reduction in tariff on imports from the United Kingdom went into effect, the figures of our exports to Canada during the ten months ending with April, 1897, are \$51,903,579, or but one-half those of the ten months ending with April, 1904.

The Canadian reduction of duty on imports from the United Kingdom and certain of its colonies began in April, 1897, with a reduction of 12½ per cent. In 1898 this reduction was increased to 25 per cent., and in 1900 to 33½ per cent., and has so continued up to the present time. A table showing the total exports from the United States to Canada, covering a long term of years, indicates that there has been more rapid growth in exports to Canada since 1897 than at any period preceding that year.

For the full fiscal year our exports to Canada were, in 1874, \$41,000,000; in 1884, \$44,000,000; in 1894, \$56,000,000; in 1897, the year in which the Canadian reduction of duty on imports from the United Kingdom occurred, \$65,000,000, and in 1904 seem likely to be nearly or quite \$130,000,000, and will exceed those of any preceding year.

Comparing the growth of Canadian imports from the United States and the United Kingdom since 1897, the Canadian figures show imports for consumption: From the United States, in 1897, \$61,649,041, and in 1903, \$137,605,195; from the United Kingdom, in 1897, \$29,412,188, and in 1903, \$58,896,901.

Must Use Wireless Ears.—One of the attractions at the St. Louis World's Fair will be what is called "the noisy, noiseless court," which is the invention of an electrical engineer of New York. No specific details have been published, but the idea is to demonstrate wireless telephony. Within the stone walls of the court no sound is to be heard until a pocket telephone receiver, unconnected anywhere with wire, is put to the ear, when the playing of a brass band, the elocution of monologuists, etc., at once become audible.—*American Inventor*.

Lectures on Russia in American College.—In following a policy adopted during the Boxer troubles in China (when a department of Chinese was established), Columbia University of New York has announced that next fall a lectureship in Russian history will be started under the auspices of the faculty of political science. The first incumbent of the new chair will be Dr. Vladimir Simkhovitch, who has been the supervisor of the department of serials in the university library.

Japan's Trade with United States Increases.

WITH a view to correcting the impression, generally entertained in manufacturing and commercial circles here, that the Russo-Japanese war is reacting upon the trade of the latter country, the Director of the Foreign Department of Commerce and Labor at Tokio has compiled the export figures from the United States to Japan for the first quarter of 1904, as compared with the like period of 1903, showing the contrary to be the case. The foreign commerce of the United States in 1903, compared with that of 1893, increased as follows:

	Per cent.
Commerce with South American countries.....	30
Commerce with European countries	60
Commerce with North American countries.....	80
Commerce with Asiatic countries	275
Commerce with South African countries.....	475
Commerce with Japan increased	800

The Director says: "Instead of the normal demand having fallen off because of the war, it has increased owing to the extra stimulus given to business by the war, and the fact that Government officials everywhere are emphasizing the importance of all non-combatants attending strictly to their peaceful vocations in order to promote domestic commerce and industry so as to meet all the necessary expenses of the Government and maintain the national stability and credit."

The Director's figures are sustained by a report issued by the United States authorities at Washington. It appears Japan's commerce with the United States in the fiscal year ended June 30th shows a marked advance over that of any preceding year, and for the twelve months ended June 30th will probably exceed \$70,000,000. Figures covering the first eleven months of the current fiscal year have been issued from the statistical bureau of the Department of Commerce and Labor showing American exports to Japan amounting to \$22,594,713, as against \$19,854,843 in the corresponding months a year ago.

Opportunities Will Follow the Far East War.

JAPAN has a very interesting periodical called the *Sun Trade Journal*, which contains the following editorial of value to exporters and others interested in international trade: "The progress of the war so far shows that the palm of victory will remain in the hands of the Japanese. According to the latest informations, Japan has completely established her supremacy on the seas. One of the greatest fears entertained by the Japanese at the commencement of the war was the comparative weakness of their navy. If the navy wins the victory of the army is a foregone conclusion. The question how long the war will continue is an open one, and yet when peace is restored there will be grand opportunities for foreign manufacturers to push their interests in the Far Eastern markets; but the seeds are to be sown if they would reap fruits. It seems to us now is the best time for sowing the seeds. Watch for opportunities."

Regarding the war's effect upon business in Japan, the *Sun Trade Journal* says: "Japanese business men were prepared to a certain extent to meet the difficulties arising from the war with Russia, so that they are not surprised that their business is affected by the war. We have not heard any complaints made by business men against the war. Patriotism has a greater influence upon them than money. Contributions are freely made, and if the war is prolonged Japan can meet financial difficulties with the sympathetic supports of foreign powers, especially England and America. At the beginning of the war it was generally feared that even if Japan should win she would be financially crippled, so that her condition would be worse than before. So far this fear has not been substantiated."

Postal Service in Panama Canal Zone.

ARRANGEMENTS for postal service in the Panama Canal zone have been practically completed by the officials of the United States having that matter in charge. Post-offices were started last month in Culebra and Matabachin. United States mail messengers will be on each train on the railroad receiving mails from the local postmasters on the line and delivering the same at the offices in Cristobal and Ancon, the Atlantic and Pacific terminals of the canal zone.

Arrangements are being made with the Panama postal authorities to receive and forward the South American and Central American mails. Regular mails for the United States and her possessions will be forwarded to New York by the postmaster of Cristobal. Registering and money-order offices will be established as soon as possible.

Mail matter from the United States to the canal zone and vice versa will be carried at the regular domestic rates of 2 cents, gold, but for Panama and Colon and all points outside the zone the regular foreign rates will be charged, in accordance with the international postal convention at Berne.

The B. F. Sturtevant Company.—Announcement is made of the removal of this company's entire plant from Jamaica Plain to its new works at Hyde Park, Mass., U. S. A. With nine acres of floor space and all the modern appliances, it will continue to manufacture blowers, engines, motors, economizers, forges, steam heating, ventilating and drying apparatus, etc.



Griffin Cleaner and Paste Combination

for Cleaning and Polishing Russet and Russia Leather Shoes and all Articles made of Russet and Russia Leather.

NOTE—Our Cleaner contains no Camphor.

Our Cleaner and Paste Combination for cleaning and polishing Russet and Russia Leather Shoes (and all articles made of Russet and Russia Leather) cannot be surpassed, if used according to directions. The Cleaner cleans and removes stains, and the paste produces a brilliant, durable waterproof polish, which is not sticky or gummy. We also make it in different colors, ox blood and brown.

Price per gross, large size.....\$14.00

Price per gross, small size..... 7.50

Discount, 10 per cent.

Griffin Russet Leather Polishing Paste.



Our Russet Leather Paste for producing a high gloss on Russet and Brown Leather Shoes (and all articles made of Russet or Brown Leather) cannot be surpassed, if used according to directions. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and yet is not a varnish.

Excellent for vici kid.

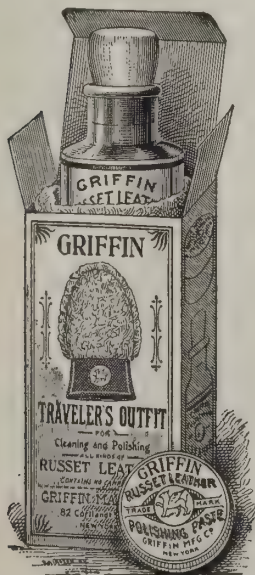
We guarantee it not to injure the leather in the slightest degree, as it is free from acids, and will not soil the finest of fabrics.

If the shoe is dirty it should first be cleaned with Griffin Russet Leather Cleaner.

Price per gross, large size.....\$6.00

Price per gross, small size..... 3.50

Discount, 10 per cent.



Griffin Russet Traveler's Outfit.

An excellent thing to take along when traveling.

Contains a bottle of cleaner for cleaning and removing stains. A box of our polishing paste and a polishing mitten.

Price per gross.....\$18.00

Discount, 10 per cent.

Our Parisian Dressing.

A Black Dressing for Ladies' Shoes. Is considered by good judges to be the best and nicest put-up 10-cent dressing on the market.



We guarantee it not to contain anything injurious to the leather. It contains oil which helps to keep the leather soft and pliable. Packed in one and three dozen boxes.

Price, per gross, \$8.00. Discount, 10 per cent.

Griffin Sterling Combination

Our Sterling Combination for dressing and producing a gloss on shoes made of Box-Calf, Cordovan, Vici Kid, French Enamel and all fine dry black leathers. Cannot be surpassed if used according to directions. It is easily applied, polishes quickly and easily; its lustre is brilliant, durable and not sticky or gummy and will not crack or scale off. It keeps the finest of leather soft. We guarantee it not to injure the leather in the slightest degree, as it contains no acid or other injurious substances.

A circular in each package giving full directions.



Price per gross, large size.....\$15.00

Price per gross, small size..... 8.00

Discount, 10 per cent.

Griffin Patent Leather Polishing Paste.



Our Patent Leather Paste for restoring the gloss to all articles made of Patent and Enamel Kid Leather cannot be surpassed. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and is not a varnish, as it leaves no coating.

We guarantee it not to injure the leather, as it is free from acids.

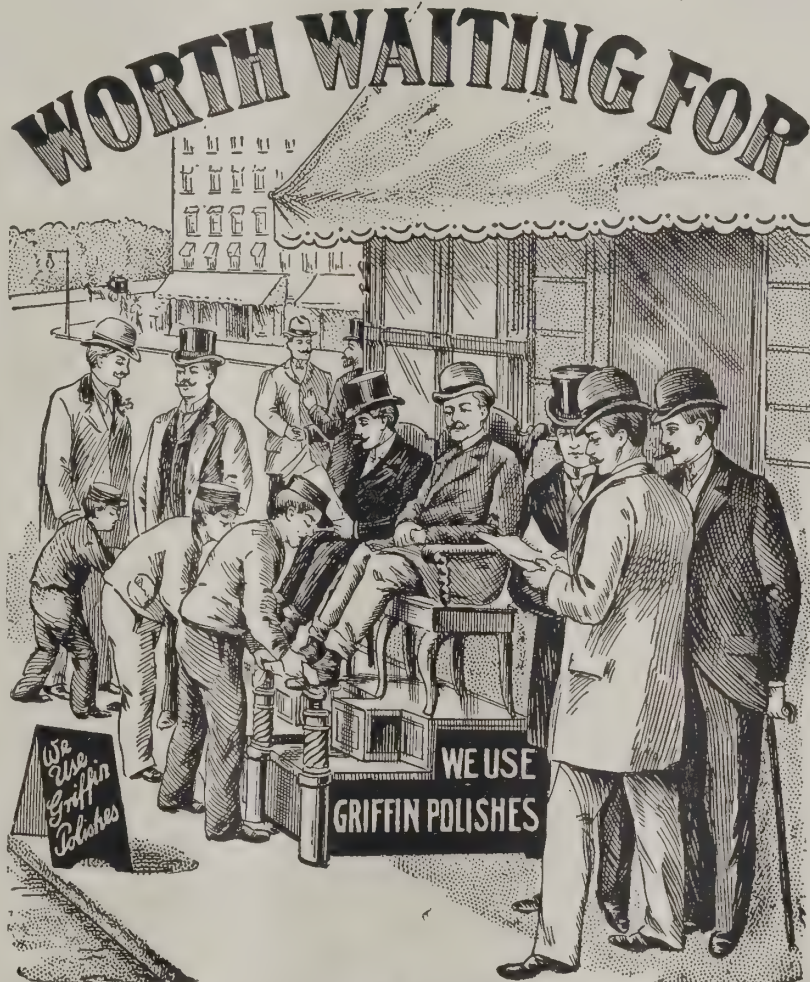
It is invaluable for brightening the saddle and blinders of harness, as the polish is waterproof.

Just the thing for manufacturers of harness to use, as it will prevent the Patent Leather parts from becoming dull.

Price per gross, large size.....\$6.00

Price per gross, small size..... 3.50

Discount, 10 per cent.



GRIFFIN SNOW WHITE.



For cleaning and re-whitening white shoes made of canvas, suede and buckskin.

Price, per gross, \$10.00. Discount, 10 per cent.

NONE BETTER MADE AT ANY PRICE.

Send us a trial order through any commission house in New York; above prices f. o. b. N. Y.

GRIFFIN

High-Grade Shoe Polishes.

GRIFFIN M'F'G CO.,

82 Cortlandt St.,

New York, U. S. A.



Griffin Sterling Traveler's Outfit.

For Box-Calf, Vici Kid, French Enamel and all dry Black Leathers.

Put up in a carton. Contains a bottle of Sterling Dressing, a box of Polishing Paste and polishing mitten. Also suitable for Enamel and Patent Leather.

Price per gross.....\$18.00

Discount, 10 per cent.

The German Kaiser and "The American Danger."

WHAT has been called "The American Danger" in Germany is given attention in a long article in *Leslie's Weekly*, from which these extracts will interest our readers in other foreign countries:

"It should be explained that German animosity against America is confined to, and encouraged solely by, the commercial class. All other classes in Germany are friendly to the United States, this friendly party including the nobles, the professional and official classes, and the social and diplomatic element. This pro-American faction is headed by Kaiser William II himself.

"To illustrate the distinction between the antagonistic and the friendly class, I cite the following facts: When the Chamber of Commerce of Berlin prepared for its recent annual banquet, invitations were sent to all foreign ambassadors, with the single exception of the American Ambassador, Mr. Tower. This is accounted for only because of the fact that the Chamber of Commerce, as a body, represents the commercial—and therefore anti-American—class.

"Now, mark the rebuke that immediately followed, administered by the Kaiser as the representative of the pro-American class. The day succeeding the banquet my duties called me to the American embassy. A dense throng of people filled Unter den Linden—the Fifth avenue of Berlin—and that part of the crowd around the embassy seemed particularly reluctant to yield to my request for 'way' for entrance. One of the policemen who lined the avenue came to my rescue, and I secured a place in an upper window of the embassy just in time to witness the imperial rebuke already referred to. '*Hoch der Kaiser!*' or something to that effect was flung forth from 10,000 throats. His Majesty was coming. He had just returned from a hunting trip, and was now driving from the railroad station to the palace. He was seated in one of his less pretentious carriages and was attired in his hunting costume. In a second carriage, exposed to the delighted public gaze, were the trophies of the royal chase—antlers, skins, deer-head and the head of a wild boar.

"Over the building—practically American territory—from which I watched the scene, floated the American flag. As His Majesty approached the embassy he stood up in his carriage, bared his head and saluted first the Stars and Stripes and then the representative of our national emblem, Mr. Tower, who stood in one of the windows. No act could have impressed the populace as this simple demonstration of their sovereign's friendly feeling toward the United States. It was intentional and it was dramatic, as is every public act of the Kaiser's. It was significant, and the people understood why; for the newspapers that very morning were full of the story of the marked discourtesy of the Chamber of Commerce in not inviting the American Ambassador to the banquet. Nor does the story end here. The following morning the papers announced that His Majesty had graciously presented the Ambassador from the United States with the handsomest pair of antlers brought from the hunting-field.

"And still a third chapter there is. A few nights later a dinner was given on board one of the Hamburg-American Line steamers at Hamburg, to celebrate the launching of a great new vessel belonging to the company. At this dinner Mr. Tower was a guest, and it was he who sat on the right of the Kaiser—who invariably attends to such celebrations. This mark of distinction was interpreted by some as having significance only in the fact that the principal trade of the line was with America, but the pro-American element gave it what was unquestionably the correct construction—that is, a third in the series of imperial rebukes to the foremost commercial body in Germany."

Gigantic Dam Suggested for the Port of London.

CONSIDERABLE interest has been aroused in America by the suggestions which have been made for the improvement of the port of London by the erection of a gigantic dam, or barrage, in the Thames at Gravesend, and the conversion of the river from that point to London Bridge into a lake instead of a tidal stream. At present London labors under the disadvantage that its tides impair the usefulness of the port and result in great and unnecessary expense to the owners of vessels, which would be altogether obviated should the plans for a barrage be feasible and be put into execution.

It may be presumed that the plan owes its origin in large degree to the successful execution of the great barrage in the Nile, one of the most remarkable achievements of English engineering skill exhibited in recent years. The project, as expounded by its originators, involves the construction of a barrage somewhat similar to that on the Nile at Assuan, but, of course, of smaller dimensions, across the Thames at Gravesend, some twenty miles below London. It is to contain numerous adjustable sluices, together with a series of the largest-sized locks suitable for raising and discharging modern vessels of the heaviest tonnage.

The dam is to be so built as to keep the water behind it at about the present high-water mark, and the great increase of depth, ranging from 65 feet at Gravesend to 32 feet at London Bridge, would have an obvious result as regards all purposes of navigation at the port of London. It would do away with any necessity for dredging by adding water at the top, and under such conditions ships drawing 30 feet could proceed to London Bridge at any hour of the twenty-four without waiting for tides, while vessels of all tonnages and draughts could lie alongside any wharf or dock, remaining at one level for loading or unloading.

Another very sensible advantage would be the doing away with the tidal entrances to the various London docks, which now have to be maintained and

worked at a considerable expense, it being estimated that the cost of these gates amounts to between \$250,000 and \$500,000 per annum, constituting a severe additional tax upon London's sea commerce. It is furthermore urged that after the construction of the dam the foul water of the present tidal river will be pushed out by the influx of that which comes from the upper portion of the stream, and it is claimed, in addition, that the absence of mud and flats, the reduced cost of towage and barging, freedom from swinging with the tides and the collisions which it produces are among the incidental advantages, involving in all cases a reduction not only of risks, but of cost as well. In short, the proposition involves the establishment of a fresh water lake in place of the muddy estuary which now serves as the sea entrance to the greatest city in the civilized world.

The scheme has not yet passed beyond the stage of mere suggestion. In fact, there are complications in the way of obtaining the necessary authority from the British Parliament, which would be one of the chief prerequisites. A measure is already pending before that body for the acquisition by the public of title to the various London docks. It would seem, in the opinion of competent American observers, unnecessary to push an arrangement of this kind, if the elevation of the water level, which would follow the erection of the barrage, should place the docks and wharves and piers, either those in existence or the new ones which would undoubtedly be constructed, on a perfect equality as regards this service and operation. The matter, however, is exceedingly interesting, and it is to be presumed that some steps of the kind will be taken with a view to the maintenance of London's commercial importance among the ports of the world.

Progress in Windmills—American Substitutes Are Better.

ELECTRICITY is becoming increasingly useful in farming, and with its growing importance come the various experiments at harnessing the wind and making it drive the generators. Water-power, of course, is used where it can be obtained as a prime mover; but where it cannot be had steam has been called in. Steam is expensive, however, and of late experiments with wind-driven generators have become numerous.

Windmills are as common in many parts of America as in Holland, but hitherto have been used chiefly for purposes of irrigation. Recently, however, they have been used to generate electricity—at first for lighting houses and barns, but now for running motors used in driving light machinery. At two experimental farms in Germany two complete electrical plants are in operation, deriving their power solely from the wind, and in this country windmills are in use, connected with generators or with pumps, as the need of the hour demands, although these are experimental attempts to harness the air.

On some farms several mills are coupled in operating the generators, and 10-horse-power motors are worked. On other farms the windmills and the motors are distributed, producing lower powers at various points, rather than high power at a single point. Even a single large windmill may generate enough power to run a 2 or 3 horse-power motor.

Despite the advantages that might seem likely to follow from the progress which is being made in utilizing the wind, we doubt if it can ever be satisfactorily harnessed for economical, commercial or agricultural purposes. We print the above account of what is being attempted purely for the information of our readers. The experiments are interesting, but that is all that can be said. For practical purposes the windmill is beaten to a standstill by American appliances for use in its place—machines that cost less than windmills and possess continuity of action, with power graded to the tasks that are to be encountered. Our manufacturers have provided marvelously efficient substitutes for windmills. American gas, gasoline and hot-air engines have reached a degree of perfection and have stood such satisfactory tests in so many countries of the world, outside of our own, that we are really surprised to learn that anybody is seriously making a deliberate attempt to "harness the wind." Such a man might easily be expected to transfer his cash account from the Bank of England or the National Park Bank of New York to a sand-bank.

American Carpet Sweepers Are Up-to-Date.

SAID a New York merchant recently: "How old is the carpet-sweeper? Oh, I guess about thirty years, and when it was first brought out it was carried about from house to house by canvassers, who showed its operation and sold one when they could. Now the carpet-sweeper is everywhere as among the essentials of household equipment."

"American carpet-sweepers are exported to every civilized land. One American concern has a carpet-sweeper factory in France. If there is a household article of world-wide use it is the carpet-sweeper. Sweepers in carload lots, from factory to distributing centers, are common shipments.

"Originally made with a view to purposes of utility solely, and so with the simplest and plainest of hardwood cases, carpet-sweepers are now made of all sorts of fine woods. You can now buy a carpet-sweeper with a case of figured rosewood or of Hungarian ash, of bird's-eye maple or of California laurel, of curly birch, of oak and of mahogany, and so on, and these can be had in different styles of finish. Carpet-sweepers are now made in many sizes, ranging from little toy sweepers up to the regular 14-inch size, the standard for domestic use, and from that up to the big 28-inch steamboat sweeper."—*New York Sun*.





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Make Large Profits Easy by Economizing in Time, Labor and Money.


We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

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Is invaluable for making delicate salads, garnishings, etc. Makes Juliennes ten times as fast as by the ordinary method and is the only utensil that will produce **Lattice Potatoes**. Is extremely simple to operate and sells rapidly wherever shown.

\$16.50 Upon receipt of SIXTEEN and 50-100 DOLLARS in U. S. Gold or its equivalent, we will deliver boxed, ready for steamer, F. O. B. cars New York, one gross [144] No. 6 X SLICERS, for Export only. Weight boxed, 120 lbs.

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JULIENNES **LATTICE POTATOES**

Power Direct from Coal Is Promised.

CHICAGO, the American city from which so many wonderful things in science are now emanating, has tackled the old-time problem of converting coal directly into power, without the use of the steam generator. The world will be skeptical, however, until the inventor, Hugo Jone, a chemist employed in the Chicago municipal laboratory, consents to give out more than a meager and unsatisfactory list of details. He terms his apparatus a battery and promises that it will soon supplant entirely all steam engines, because much of the power lost by the latter in friction and in other ways is saved and converted into power. Of course, it is a well-known fact that much power is lost by present appliances, but hear what he has to say to a Chicago reporter, to whom he talked:

"The new battery is going to supplant the steam engine, as its yield is four to five times as high as that of the steam engine—an advantage which has been thoroughly demonstrated and which will naturally prompt railroad companies, factory owners and others producing power or light to use the battery. All metals and other substances used in the Jone battery are easily reducible and easily oxidized as well. As a result, the processes in the battery, from a chemical point of view, are cycles in which the substances are recovered, so that they can be used over again. The coal is the only substance used up. None of the batteries hitherto in use can boast such an important advantage. At the same time the internal resistance is very low. Another big advantage is the fact that the electric current is of a truly electrochemical nature and not of merely thermal origin.

"The principal of the new advantages of the new invention may be summed up as follows:

"1. It requires only about one-third of a pound of anthracite coal for a horse-power hour, while the steam engine requires about two pounds, therefore about six times as much.

"2. If ordinary or soft coal is used the battery requires about one-half a pound of coal for a horse-power hour, while the steam engine requires about three pounds, therefore again about six times as much.

"3. Similar conditions prevail with other liquid fuels.

"4. Explosions, such as boiler explosions, the prevention of which requires so much care in the handling of steam engines, are an impossibility with the new battery.

"5. There will be less smoke with the new battery as power generator than there is with the steam engine.

"6. No limb-breaking machinery and no clumsy transmissions of power by means of endless chains and turning shafts.

"7. Compared with other batteries, many conveniences, such as the contamination of the air by acid vapors or the corrosion of the cell vessels, are eliminated.

"These advantages of the cell have been demonstrated by experiments and exact measurements, and are not at all based on mere theories."

The cost of a 16,000-horse-power engine is \$2,100, and Mr. Jone says that the cost of one of his plants of similar power would be \$1,400, and would be also an annual saving of \$150 in operation. In larger installations the saving by the Jone system would be greater in proportion. Our readers will be kept posted regarding any further developments relating to this invention.

Earning Power of American Traction Engines.

MANY of our readers will be interested in the following prize essay on the "Full Earning Power of a Traction Engine" which was written in response to the offer of a valuable prize by our esteemed contemporary, *The American Thresherman*, and which shows how American traction engines can be utilized anywhere in the world. The localities mentioned are in the United States. The prize-winner says: "In North Dakota the greatest use to which the traction engine will be put is undoubtedly threshing, but as this lasts but three months in the year at the longest it is to the advantage of the owner of every traction engine to find some profitable employment for his machine for the other nine months of the year; otherwise his engine and consequently the capital invested will be earning no interest, but rather deteriorating to some extent.

"When the country is new a traction engine can be very successfully used for the purpose of breaking up the prairie sod. The average price for breaking is about \$3 per acre. Three men and a 25-horse-power engine can break twenty acres per day on an average, in most localities, at \$3 per acre, or a gross earning of \$60. The expenses are about \$5 for an engine, \$2 for a fireman, \$2 for a tankman, \$3 for a team, \$3 for lignite coal and \$10 for wear and tear, making in all about \$30 for expenses. This would be 100 per cent. net profit on the investment. Of course, these figures will not always be realized, but there are many men in the western part of this State and the Northwest Territories who have exceeded this amount of net gain.

"Such an outfit should be able to plow about one hundred inches in width, but this will vary according to local conditions. There should be enough plows to make a reasonable load without overworking the engine.

"Traction engines may be used to advantage in many communities for plowing, after the breaking is done, but the prevalent loose sand after the land is worked for some time is so hard on the traction engine that plowing is generally not practical with a traction engine.

"In new sections of the country, especially where hay is very abundant and cheap, it might be a very profitable business to put in a large hay-press. In

this way the machine could be easily moved from field to field, and all the hay could be cheaply baled and shipped to older-settled communities, where it is a scarce article and always brings a good price. There is no reason why baling hay should not be found to be a profitable business over large sections of this country. On large farms especially, where there are large barns, it is much more economical to feed cut hay and straw. A traction engine is an excellent motor to run a large hay and straw cutter. In this way a barn can be filled full of finely cut feed, which can be fed to much better advantage than uncut feed. This is an opening for a traction engine, as yet hardly exploited.

"North Dakota is now in the corn belt to an extent undreamed of ten years ago. This makes the silo a coming necessity on every farm. For the purpose of cutting the corn and filling the silo some powerful motor is necessary, and the traction engine is about the only article that fills the bill in a satisfactory manner. In the future it is reasonable to expect to see the traction engines of this State earning thousands of dollars for their owners, filling large silos with the best cattle feed to be obtained in the country.

"Where cattle and sheep are raised in large numbers a dipping tank is a necessity. For the purpose of lifting and lowering the cage containing the animals to be dipped, the traction engine is the best motor obtainable. The boiler supplies plenty of steam to keep the dipper mixture at the proper temperature, and the cable which lifts the cage is attached to the rear end of the engine, so that by going ahead or backing up, the cage is raised or lowered smoothly, quickly and effectively.

"On many farms ground feed is a necessity, where large numbers of work-horses and dairy cows are kept. By means of a traction engine and a feed mill a farmer can easily and cheaply grind up enough feed to supply his stock for half a year. It is always much more convenient to grind up a large supply in this way than to be bothered with grinding every little while with a windmill or hauling your grain to and from some distant mill.

"In some localities where wood is plentiful a circular-saw driven by a traction engine is the most economical method of cutting it, although small gasoline motors are displacing steam engines to quite an extent at this business.

"The digging of artesian wells has been a profitable employment for the traction engine throughout the artesian basin in Walsh and Pembina counties, as well as other localities, in the past and doubtless will continue to be for some time in the future.

"The construction of graded roads, drainage and irrigation ditches is just in its beginning in this State. For this purpose large graders will be the principal machines used. In most cases horses will furnish the power, but in many cases it would be found cheaper to use the otherwise idle traction engine. In this capacity the traction engine will doubtless earn fame for itself and gold for its owner over large areas of the Northwest States and Territories.

"Probably not any engine owner will be able to put his engine to all the uses mentioned above, yet most every man owning a traction engine will be able to find some other profitable work for his engine besides threshing. In any case the full earning power of a traction engine is only attained when the engine is run every day, paying the price of operation, the wear and tear on machinery, a reasonable interest on the investment and also a reasonable profit for the care and bother of operating the plant. Whenever an engine can earn that amount it should be run, but when it cannot do so it should be shut down."

Industrial Development of the United States.

WALTER H. PAGE, in the July *World's Work*, says that the most impressive social fact in modern social history is the industrial development of the United States. In our more prosperous States there are perhaps 40,000,000 of persons more comfortable, better fed, better clad, better sheltered, more healthful, more economically efficient, and with a higher level of intelligence; than any solid mass for 40,000,000 persons that ever before dwelt contiguously.

We have proved that, in a mobile social condition—a society in which men are free to choose their work and to develop their personal aptitudes—men find their highest economic development. From mechanics to great industrial organizers we have in this generation bred men that are the first of those that make things and the ablest of those that organize things. Thus has democracy justified itself industrially, and it has made a new chapter in the history of mankind.

Automatic Telegraphy for Business Men.—The *American Inventor* prints the following: "A South Orange, Wash. (U. S. A.), inventor has produced an automatic telegraph machine which he claims will land a thousand-word letter in a business office in Chicago half an hour after the words are dictated in New York. A stenographer punches out the message on tape, which is then fed to the transmitting machine. One minute suffices to reproduce the punched characters at the other end of the line. Another stenographer translates them. The cost to the sender in a New York instance (about 1,000 miles) should be from 10 to 12 cents."

Telephones in America.—The increase in the use of telephones in this country has been vastly out of proportion to the growth in population. In 1890 the city of Chicago had, roughly, one telephone to every 150 inhabitants. By 1900 the proportion had grown to one for every 55 inhabitants, but now it is one to every 25 inhabitants, and the increase elsewhere in the United States has been on the same scale. Subscribers now secure practically a 5-cent-a-message rate within their own municipalities.

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

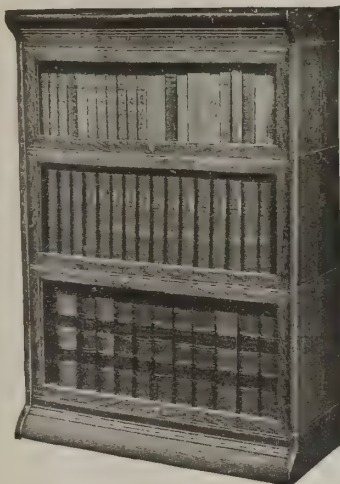
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THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 1/4 cubic feet. This cut represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/4 inches deep and 32 1/4 inches long. Made of selected quarter-sawn oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
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Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

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Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

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Top Section
List, \$3.00

9 1/4" Section
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9 1/4" Section
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11 1/4" Section
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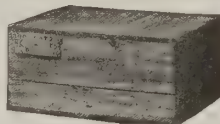
11 1/4" Section
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11 1/4" Section
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13 1/4" Section
List, \$5.25

Base Section
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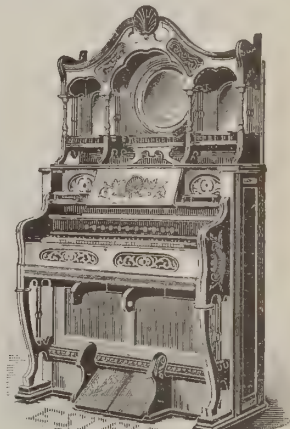
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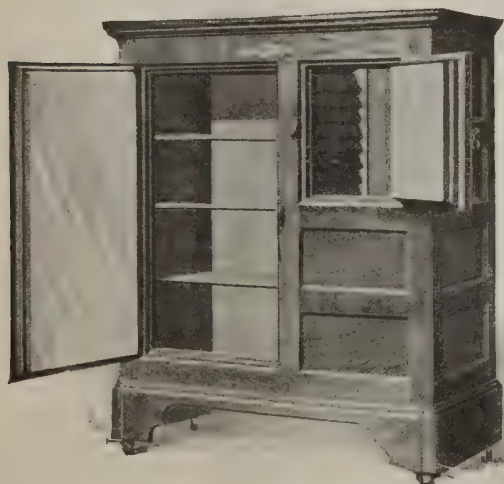
The prices here quoted includes boxing ready for transportation and delivered F. O. B. cars at New York City.

No. 2. Style "A." Panel Door. Price, \$23.00. Outside measurements (inches): Width, 38; depth, 21; height, 44. Weight, boxed, 278 pounds.

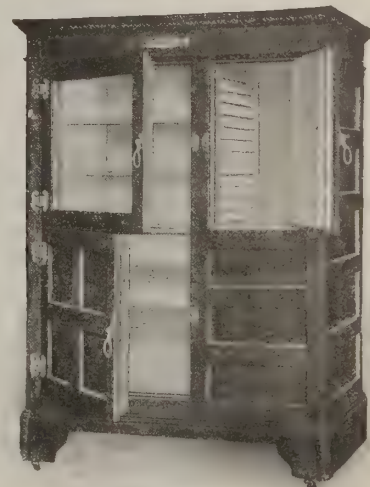
No. 5. Style "D." Upper Door Glass. Price, \$49.00. Outside measurements (inches): Width, 48; depth, 26; height, 66; weight, boxed, 540 pounds.

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No. 2. Style "A." Panel Door.



No. 5. Style "D." Upper Door Glass.

A New View of America's Industrial Progress.

STATISTICS and comparisons are not always either interesting or profitable, but a summary of an article in the *Engineering Magazine*, in which William J. Clark, who is manager of the foreign trade of a great American electric company, discusses the reasons why America is the best market for manufacturers, is of interest, as showing why our manufacturers are enabled to sell their goods to foreign customers at such reasonable prices.

According to Mr. Clark, in the manufacturing plants of the United States in the year 1900 there were at work 5,308,406 wage-earners. These turned out in manufactures \$13,004,400,143. Average product value per capita of earners, \$2,450, or per capita of population, \$170. Total horse-power used in manufactures, 11,300,081. Horse-power per wage-earner, 2.15. Total consumption of manufactures, \$12,885,609,303. Approximate consumption per capita of population, \$169.

Mr. Clark proceeds to say: "The United Kingdom of Great Britain and Ireland had 9,000,000 wage-earners in 1900, yet their product in manufactures was but \$5,000,000,000, far less than half the output of our five million and odd of workers. They used only .33 horse-power per capita—one-seventh as much in proportion as we use. Germany reported 10,000,000 wage-earners, \$4,600,000,000 in products, .34 horse-power per worker. France, 5,000,000 earners of wages, \$3,450,000,000 in manufactured products, .30 horse-power per capita.

"Other European countries (and Japan, in Asia) ranged lower yet, but Canada, with 550,000 wage-earners, turned out \$800,000,000 in manufactures, which was \$1,455 per capita of workers and \$146 per capita of population, and the horse-power employed in the Dominion was 1.36 per head of workers.

"In point of consumption per capita of population Canada surpassed the United States, her 4,800,000 using \$880,000,000 in manufactures, or \$183 per head.

"The United Kingdom, 41,000,000 population, consumed \$4,273,397,438 in manufactures, or \$104 per capita; Germany, 56,367,000 people, \$4,152,450,000, or \$74 per head; France, 38,700,000 population, \$4,152,450,000, or \$82 per head; Belgium, 6,700,000 people, \$660,000,000, or \$98 per capita.

"In the particular of consumed products Australia came just after the United States, with a demand for \$605,000,000 in manufactures, or \$162 per capita, for a population of 3,700,000. Australia's own 550,000 wage-earners were credited with an output value of \$500,000,000. In bare totals of manufactures consumed, Russia, \$2,000,000,000, followed Belgium. Then came Austria-Hungary, \$1,900,000,000; Italy, \$1,714,000,000, and a dwindling procession in nine figures."

Finishing with his various tables, Mr. Clark declares that they "show conclusively that America itself is by far the best market of the world for manufactured products."

American Progress in the Bronze Industry.

BRONZE tablets, larger than any heretofore cast, have just been made for one of the great new bridges which is being built as an additional connecting link between the chief borough of New York City and one of its other boroughs. The casting is an evidence of progress in this branch of American industry. Some extracts are given below from a lengthy account of the feat recently published in the *American Inventor*:

The two immense bronze tablets that are to adorn the entrance to the Williamsburg Bridge across the East River, the most magnificent ever attempted or known to the art of bronze casting, were recently cast. These tablets, when completed, will be of gigantic dimensions, measuring 53 feet 7 inches in length, 4 feet 3 inches in breadth, and will weigh 6,000 pounds each. They are covered with a great amount of inscription, which gives the names and dates of the various commissions under whose direction the plans for constructing the bridge were formulated and carried into effect, with a concise history of its erection and a long list of the officials connected with the legislation that authorized the building of the structure, and of the men to whose practical genius was due the successful completion of this prodigious engineering feat. The letters of inscription vary from 3 inches to 9 inches in height.

The first and most important difficulty that confronted Mr. Hornbostel, the architect who designed the tablets, was to ascertain the feasibility of casting tablets of this immense size, as the proportions have no precedent in this line of work. In the art of bronze casting (the oldest known to civilization) the Colossus of Rhodes, a figure of the sun-god Helios, was an example of the utmost that could be accomplished. This statue was designed by the sculptor, Chares, and took him twelve years to perfect.

Among the hypothetical stages of the development of mankind "The Age of Bronze" occupied a prominent part. The oldest seat of bronze casting was the Island of Delos, and from here the art was disseminated throughout the Grecian and Roman empires. Later the Etruscans made much advancement in the use of bronze, but their successes were chiefly confined to its utilization for industrial purposes. With the advance of civilization bronze casting has always been closely identified with the fine arts, especially in Italy, Germany and France, from whose productions come the sculptural masterpieces. The United States is rapidly gaining a reputation in the use of this valuable metal for colossal statuary, but in the industrial arts of this country it has figured to an extent that surpasses all the various foreign centers combined.

The use of bronze for ornamental purposes is rapidly finding favor, and is

to-day taking the place of iron, marble and wood work in interior decorations. In fact, we find it extensively used for bank fixtures, tablets, stair-cases, doors, fences, ornaments and for every other purpose in handsome building construction.

Bronze is a combination of copper and tin in varying proportions, as required for the particular use to which it is adapted. The alloy thus produced makes a non-fusible metal, very hard, brittle and sonorous, well suited for casting. It requires a fine knowledge of the art to obtain the desired quality of metal that will acquire a fine patina or color upon exposure to the atmosphere, especially for exterior uses, and this can only be accomplished by the process of amalgamation. Other features of casting that call for great expertness are the making of the patterns and molds.

True Art in Furniture Due to American Monks.

FAULTLESS simplicity is a merit of what is called "Old mission furniture" that is conspicuous at the St. Louis World's Fair. In fact, the *Furniture World* declares that it has already carried off the palm, and asks: "If there is any State building or office or reception-room on the ground which isn't fitted out with 'mission' furniture, will it please speak up?" The *World* adds that the sway of this sort of furniture appears to be as absolute as that of the low-backed and bow-legged horsehair chairs and sofas of forty years ago. While it has swiftly become commonplace and been divested of all its novelty by its universal popularity, it has not lost the unpretentious comfort that first made it attractive.

The old mission chairs and tables, book-shelves and settees were constructed by Catholic padres of California solely for use. They were capacious, to suit the frames and purposes of holy men, who grew in avoirdupois as they grew in grace. There were no cabinetmakers' gimcracks about these chairs and tables.

In ignoring art they attained the truest art, the suitability of an object to its uses. A Franciscan friar yearned for no silk-embroidered roses on his chairback, or a divan with a hand-painted scene from Romeo and Juliet upon it. The first necessity was that it be big enough, the next that it be stout enough, and the third that it be substantial enough to last. So it was built.

For some 200 years or more it served the first Christian teachers on the Pacific Coast of the United States, and then some one with an artist eye spied it, reproduced it, and now you have it until you can't rest. Mission furniture is expensive, but it need not be. Any carpenter can build it of pine and paint it black. It requires no fancy, high-priced woods. It will soon be as common as deal chairs and tables, but it will never cease to be both cheering to the eye and the wearied frame.

If it totally puts to rout the traditional round-backed chair, into which no human back ever fitted, and upon which you hang your shoulder-blades, if you are lean enough, so much the better; but let us not forget that the monks in the old California monastery were the designers of this popular fashion in furniture.

No Standard Too High for Our Consuls.

SECRETARY CORTELYOU, of the United States Department of Commerce, had the following to say recently about our consuls and our foreign trade: "The comments by the newspapers and business of other nations indicate that our consular service compares well with that of other countries. But that is not enough, from an American point of view. While the work of many of the consuls is of a very high grade there can be much improvement. This fact was fully recognized by the President and by those of his officials who have immediate supervision of the work of the consuls. The suggestions made by the business public from time to time with reference to the practical problems which confront them in their attempts to increase their export trade will undoubtedly prove helpful in this direction. The consuls are essentially commercial officers. They should play a more vital part in the extension of our foreign trade. Their relations to the new department are one of its pressing problems. The Department of Commerce and Labor will do its share in the effort to improve this service whenever improvement is shown to be needed."

Manufacturing Oxygen.—A plant for the manufacture of oxygen, to be used in charging its distilled water, was put in operation recently at an ice plant in Los Angeles, U. S. A., says the *Philadelphia Record*. Oxygenated water is now being prescribed by physicians in certain diseases, and hence a cheap and simple method of separating the oxygen in the atmosphere becomes a matter of importance. The process employed by the Los Angeles company is based on the principle that manganate of soda readily parts with the oxygen it contains when subjected to the action of a jet of steam. Oxygen made by this process, it is claimed, contains no gas other than oxygen, and no elements of any description other than slight traces of atmospheric nitrogen.

Bulgaria Wants Our Goods.—John B. Jackson, United States Minister to Greece, Roumania and Serbia, and also diplomatic agent in Bulgaria, sends the following information relative to trade relations with the United States: "At present agricultural machines are almost the only direct imports from the United States. It has long been the wish of the Bulgarian Government to establish closer commercial relations with the United States, and the Prince of Bulgaria has expressed the belief that Americans could do a great deal toward the industrial development of his country, and that a market there could be found for many American products."

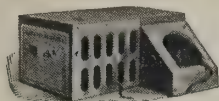
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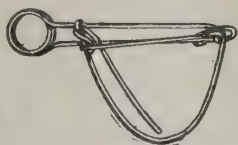
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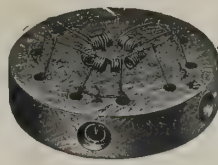
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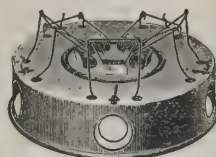
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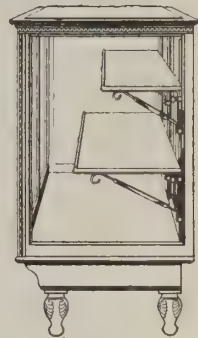
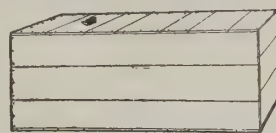


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SHOW CASE No. 31 is our leader for foreign markets, and is just the thing for displaying furnishing goods, chemists' sundries, dry goods; in fact, is well adapted for the display of any line of goods.

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Our catalogue, illustrating and describing the various styles and sizes of Knock-Down Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.



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Showing end view of an 8-ft. No. 31 Show Case set up for use, and an end view of the same case, knocked down and boxed for shipment. Weight, 384 lbs., gross; 248 lbs., net; cubic measurement, 28 cubic feet. Securing lowest possible freight rates.

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American Ideas in the Leather Trade.

PROGRESS in the leather trade in this country has been remarkably rapid during the last few years. A writer in the *Shoe and Leather Gazette* treats the subject in an interesting way: "There is nothing like leather," remarks this gentleman, "but young men do not appreciate the fact. The college-bred youth and the high-school graduate usually turn up their noses at the tannery—a place of smells and dirty workmen—but I think they will open their eyes and hold their noses for a moment, when I say that \$10,000 a year is a common salary for the heads of these big tanneries, and that some men in America are getting over \$50,000 a year for their knowledge of leather and leather-making.

"More than all, the supply of men who know how to tan leather does not meet the demand by any means, and the top-notchers in the art and science of tanning practically dictate their own terms to their employers. These conditions are due to a perfectly natural development of currying and tanning in America, which has escaped the public eye.

"Fifteen or twenty years ago American shoemakers used to import great quantities of European leather, especially French kid. But the American tanners have so rapidly improved in leather-making, and so scientifically developed their processes of tanning, that they now supply the entire home demand for leather and ship millions of dollars' worth of their goods to Europe every year. The demand for brainy men in the tanneries comes from both American and European tanners.

"I saw lately a letter from a Warsaw tanner asking a manufacturer, known on both continents, to get him a practical American tanner. The Russian had sunk big sums of money trying to learn the American processes by experiment, and was willing to pay a good amount for a few months' instruction by a Yankee.

"Likewise, German manufacturers want American men who know how to tan, and a German manufacturer, who recently visited this country, is now building a factory to carry out American ideas.

"But the great demand for educated tanners is from the rapidly growing American firms. The young man desiring to learn the art (for fine tanning has become more than a commonplace industry) needs a good fundamental education, honesty and intelligence and ambition; otherwise no tanner wants him. A knowledge of chemistry is always desirable, but the tanner teaches practical chemistry. Almost any big concern will give a bright young man a place, providing he wants to learn the tanning, and will pay him good wages from the start. Once started the young man advances just as rapidly as he can absorb knowledge.

"He gets a splendid American education, for he meets all classes, from the capitalist to the Greek or Armenian in the tanyard, and he also notes the wonders of chemistry, and its process, directed by skilled hands, of converting the hairy hide into the handsome, silky-surfaced, finished leather. If the young man learns well and can make a leather just a little bit better than somebody else, than he can command his own salary."

How America's Commerce Is Spreading.

A RECENT writer in *Leslie's Weekly* prints this word picture of the condition of the American export trade, showing the popularity of our goods abroad: "The last railroad built in India has American rails. Americans export their iron and motors, their machinery and galvanic wires to South Africa. Egypt, too, has more than one Philadelphia (U. S. A.) bridge. Three hundred railroad cars from Jersey City (U. S. A.) have found their way into the land of the Pharaohs, and in the foundries of Pittsburg (U. S. A.) electrical tramways were forged to connect Cairo with the Pyramids. Is it wonderful that the American manufacturer and exporter should claim, like the American missionary, that he is the great torch-bearer of civilization? For, as we have shown, he is sending the products of his mill and factory into all Europe, and it may be added that his shipments extend to all the world. New Guinea, the Caroline Islands, Peru and Greenland send to him for sewing-machines. From all parts of Asia come orders for the handmaiden of commerce—the typewriter, with 'export keyboards' in Hebrew, Greek, Armenian and Arabian characters. That the Asiatic may sweeten his everlasting tea, immense quantities of condensed milk are shipped to Manchuria and Mongolia. From Moors and Persians come orders for bicycles, while Abyssinia wants American cameras. The great Atbara bridge, in the Uganda, in Africa, was built of American steel by American engineers. A tool shop in Sandusky, Ohio, U. S. A., recently filled an order from China for 20,000 planes. Far Australia calls for 20,000 tons of steel from an Illinois (U. S. A.) plant. Java has just bought a whole shipload of wire fencing. Japan absorbs everything American, from lamps to a complete railroad. Jerusalem orders Edison talking-machines and Kentucky whisky and Pennsylvania stogies. To the shores of the River Jordan itself the American manufacturer is now sending his agricultural machinery."

Egg-Boiling Machine.—The *American Inventor* announces the invention of a device for this purpose that is of more than ordinary interest. The mechanism consists of a clock with an adjustable pointer on a dial, connected to a small wire basket. The pointer is set for two, four or fifteen minutes, or whatever time is desired to be given to the cooking, and the eggs put in the basket, which is then lowered into boiling water. At the end of the time marked by the adjustable pointer the clock puts a train of gears in motion and lifts the little egg-basket from the water, thus stopping the cooking.

Windowless Building at the St. Louis Fair.

BELGIUM'S national pavilion at the American World's Fair is said to be the largest building in the world without a window. "This arrangement was deliberately planned," says Gustave Chartrain, the architect, "to secure an even distribution of softened sunlight. Windows let in a blinding blaze of light, whereas the intervals between them are dark. We have avoided this by omitting the windows and constructing the central section of the arched roof, extending the entire length of the building, of stained cathedral glass, which will let in abundant light."

The Belgian pavilion is 267 feet long and 191 feet wide. It is 55 feet high in the center of the great arched roof, and the great dome in the center is 100 feet high. The section of cathedral glass in the top of the roof is 20 feet wide. It is a yellowish-brown and the light cast through the interior of the structure is softened and increases the beauty of the interior furnishings and decorations. Great arched entrances on all sides make up for the absence of windows in the exterior appearance.

The pavilion is peculiar among World's Fair structures in other particulars. Most of it was shipped from Belgium, including all the heavy statuary and the paintings, in which the building is rich. A statue representing Belgium, which has a place over the main entrance, is that of a woman seated, her extended hands holding wreaths. The figure is 12 feet high. On pedestals at either side of the four entrances are life-sized statues representing the arts, sciences and industries. Great lions, which are used everywhere in Belgium for decoration, have places in the angles of the dome. A great crown rests on the top of the dome.

Paintings on the outside walls of the building depict scenes in the cities of Belgium, including Brussels, Antwerp and Bruges. The interior walls show the industrial and commercial life of the country. A royal salon is being elegantly fitted with furniture and tapestry from Belgium. Prince Albert, nephew and heir to King Leopold's throne, is expected to visit the Fair and the royal apartments will be reserved for his exclusive use.

An Age of Wonderful Achievement.

IN a recent address upon American progress Secretary Cortelyou, of the United States Department of Commerce, uttered these thoughtful words:

"This is an age of wonderful achievement. Progress and prosperity are all about us. In all lines of human endeavor this mighty young nation presses forward. From a weakling has developed a giant. From 3,000,000 we have grown to more than 80,000,000. From a few States on one ocean we have become a world power. From a few problems we have come to many problems—aye, and from a few dangers we have come to many dangers. When these things are realized to their fullest extent, thoughtful men and women who study the life of the republic will ask themselves in what direction they must look for the safeguards of the future.

"It is not necessary to be a pessimist to recognize evil tendencies and forbidding influences that menace the national welfare. We are not naturally a nation of pessimists. The founders of the nation breathed the very spirit of optimism, and, while recognizing that this Government, like all other human devices, had its imperfections, the great leaders of American thought and action from the days of Washington to the present moment have carried aloft the banner of a national hopefulness and have been sustained and strengthened by a firmly rooted belief in the integrity and greatness and glory of this mighty republic. Here in the heart of New England, speaking to the representatives of one of your great educational institutions, I emphasize again this fine American trait of hopefulness."

New Locomotive Beats All for Power and Speed.

DESIGNED to be the most powerful high-speed locomotive ever built, the New York Central's big Cole four-cylinder balance compound passenger locomotive is now being tested. The reports that have been received are very satisfactory. The four-cylinder Cole, which has no duplicate in the United States, is not so gigantic as the Baltimore and Ohio's big mountain-climber, or as powerful as the Atchison giants, but it could win from them any prize for speed, and was planned to drag a very heavy passenger train at a higher speed than any locomotive in existence.

This four-cylinder Cole is the pride of the American Locomotive Company. It was placed on exhibition some time this summer at the St. Louis Exposition. The engine weighs 200,000 pounds, and with its tender 321,600 pounds. Its total wheel base is 27 feet 9 inches. The locomotive has four cylinders, and the piston stroke is 26 inches. It has four driving-wheels of 79 inches in diameter. The tender carries ten tons of coal and 6,000 gallons of water.

Catalogues.—An elegantly got up machinery catalogue creates the impression that the man sending it out makes a mighty fine line of machines. This impression is usually correct, for it is a painstaking man that gets out such catalogues, and he generally takes pains in finishing all the details of his machines, too.—*The Woodworker*.

Labor-Saving Devices.—I am frequently asked for catalogues of labor-saving devices so much in use in the United States, and I would thank manufacturers if they would supply this demand, even if the catalogues are in the English language.—*Clarence Rice Slocum, United States Consul, Warsaw, Russia*.

How Big American Factory Pays Its Workmen.

IN an American town which contains the chief plant of one of the biggest manufacturing corporations of the country every Friday at 8 A. M. a policeman emerges from the door of a bank closely guarding three men who cross the sidewalk, enter a waiting carriage with bulky packages and are rapidly carried away, says the *New York Sun*. When the office of the corporation is reached, three or four workmen come forward and help the men in the carriage to carry the packages to the paymaster's department. There they dump bills, silver dollars, halves, quarters and cents to the amount of \$120,000 upon one of the tables. Then every one gets busy.

It is 8.15 o'clock by the big office clock, and that great pile of mixed money must be counted and verified to the last cent, and then be distributed into 10,000 envelopes in amounts of wide variation, and this must be accomplished by 2 o'clock. Coats and waistcoats are thrown aside, shirt sleeves rolled up and sixteen clerks jump to their places. There are four polished tables, each accommodating four clerks. The paymaster, who holds a memorandum of the contents of each of the money packages, throws a heavy bag of coin on a table. Instantly it is untied and eight hands pull piles of the coins toward them and the counting begins. At the other tables more coins or bills of various denominations are being counted. As each bag or package is completed, the paymaster checks it off on his list.

About an hour is consumed in this preliminary work. As the last bag is checked off the paymaster heaves a sigh of relief. The first stretch is passed; the amount is correct, and they can now get to the real work of the day. In front of the first man at each table are placed a pile of bills, with small change and a tray containing rows of pay envelopes. The hands in this factory are all numbered, and the envelopes bear on the outside the printed number and the amount due to that man.

The first man at each table seizes an envelope, rapidly counts out the money it calls for and passes both to his right-hand neighbor, who in turn counts it and passes it to the next man. He also counts it and passes it on to the fourth man, who packs it into the envelope. Thus each amount is counted three times, and the possibility of error almost eliminated. Silently and swiftly the sixteen men rush the work along, with an occasional brief pause to test a coin or pass a doubtful bill over to the chief for inspection, while now and then comes a sharp call for "more fives!" or "nickels here!"

Gradually the great piles of money diminish and the trays of filled envelopes pile up until at 2 or 2.30 a howl of relief, a stretching of tired arms and the stamping of cramped feet proclaim the end. Quick work this. Four men counted out 10,000 pay amounts in five hours. That means nearly ten each minute, and the amounts vary from \$2 or \$3 to \$20 and \$25, and call for all kinds of change.

But the paymaster is not through work yet. He has much yet to do, and not a superfluous minute to do it in. Hastily munching a sandwich, he counts over the money left and thus verifies the correctness of the amounts put up. If there's an error his troubles have just begun; but it is a remarkable fact that in five years, during which the sum of more than \$20,000,000 has been paid out in wages, only once has a recount been required.

Finding the account correct, he proceeds to make any reduction which may be necessary—purchases made by workmen, trustee writs and assignments to no-money-down concerns have to be taken care of—and with much groaning of spirit he calls an assistant to take out the required envelopes and help him to mark the deductions on them, and again makes the proper change.

It is 4 o'clock by the time this is straightened out, and preparations must at once be made for the final distribution of the pay. There are sixteen pay stations at various points in this great plant, and the pay envelopes must be properly deposited in heavy tin boxes for transportation to these stations. A clerk is in charge of each box, and it is now his duty to count the number of envelopes it contains and give a receipt to the paymaster.

At a quarter of 6, when sharp and clear rings the paymaster's voice, "Ready, boys!" the boys seize their hats, a heavy tramping is heard in the corridor, a score of stalwart "lumpers" troop in, and as the paymaster calls out "Factory A," "Factory B," and so on, the box for each station is picked up and carried off by a "lumper," followed by the proper pay clerk and an assistant. As the last box leaves the office the paymaster drops into a chair. He can have a twenty minutes' breathing spell now, the first for ten solid hours of intense care. The pay stations are simply boxes built at convenient points, large enough for the clerk, and containing a broad shelf for his money trays. A wire grating surrounds him, with an opening through which he can pass out the envelopes.

Unlocking his box, he arranges the contents on the shelf and his assistant stations himself just outside the opening. Already the men have begun to line up, and as the harsh screech of the 6 o'clock whistle breaks in above the rattle of machinery and clatter of feet the first man of the line hands his check to the assistant, who calls the number, takes the envelope, which is passed out, sees that it bears the corresponding number and passes it to the man, and the next check is instantly handled the same way.

All is systematic and orderly, and when a dozen or two men have passed and the line has struck its gait the work progresses so rapidly that the men do not halt in their progress. It becomes a steady stream of men walking past the station at a fair gait, and a steady stream of money passing into their hands, without error and without mischance.

The largest number of hands paid at any one station falls a little short of 800, and within twenty minutes from the time the first check is taken up the

last man is paid and the clerks are starting back to the office. Here they count over the checks they have received, add to them the envelopes they have not, for any cause, paid out, get the paymaster's initials to the last count, and at 6.30 all are out of the office, after a day of systematic expedition which would be a record-breaker if it was not of regular weekly occurrence.

An Enthusiastic View of Steam Turbines.

ARTHUR WARREN contributes to the *American Review of Reviews* a remarkably interesting article on the changes which the steam turbine is making in the engineering world. Mr. Warren's description of the turbine era is too exhaustive for our space, but readers who are interested in the subject will do well to secure a copy of the June issue of the *Review*. The scope of the article is slightly indicated in the following introduction:

"It is probable that the last great reciprocating engine-driven power plant has been ordered. Hereafter the steam turbine will be the prime mover of the new installations. The layman is apt to think that the turbine may possibly become the steam engine of the future. As a matter of fact, the turbine is emphatically the engine of the present time. 'It is not so young as it looks,' said a demonstrator, addressing a meeting of railroad men a little while ago. Its principles are as old as the hills, but modern methods of manufacture have only now made its mechanical construction and its commercial application thoroughly practicable.

"Most new things in mechanics come when we are ready for them. If the steam turbine had been perfected one hundred years ago, or fifty years ago, or twenty-five years ago, we would not have been ready for it. If we had the means to build it, we would not have had the means to apply it in general use. Electricity has given the means for its widest application—the commercial development of electric generating devices. The electrical necessities of the hour have forced ahead the development of the steam turbine.

"High-powered electrical generators had become so huge that they had almost reached the limits of practical construction and the limits of practical space. And the demand is for higher powers still. Speed and power here are closely related. The big generators were driven as fast as the monster reciprocating engines could drive them. When this point had been reached the gradually developed turbine was ready. With a turbine revolving at 750 revolutions per minute it is possible to obtain from a small electrical generator an amount of electrical energy heretofore given only by a machine many times its size.

"Behind all other forms of steam-engine practice lies the experience of a hundred years. Behind the steam turbine is the practical experience of twenty years. It is in its commercial importance that the steam turbine is new, and this importance dates from yesterday; that is to say, within half a dozen years."

1863-1903—Forty Years of American Progress.

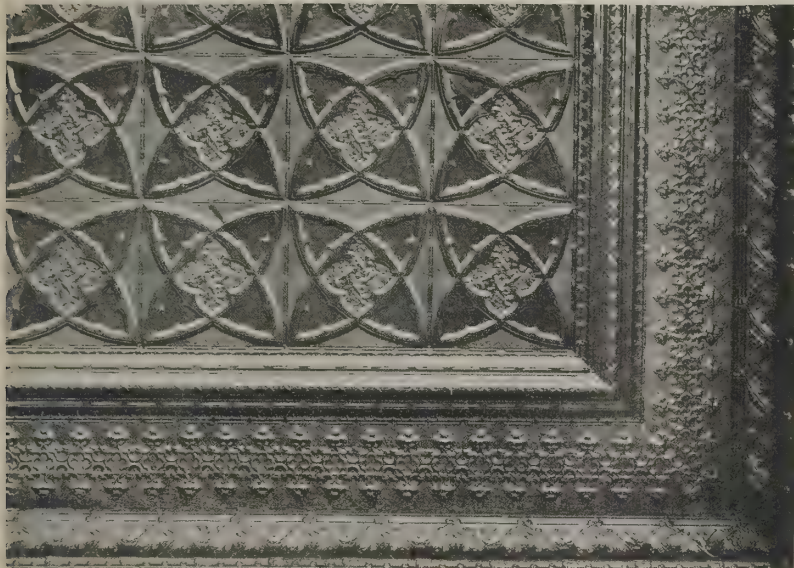
To the Editor of THE AMERICAN EXPORTER:

From \$174,000,000 to \$873,000,000 in agricultural products exported.
 From \$41,000,000 to \$407,000,000 in manufactures exported.
 From \$6,000,000 to \$39,000,000 in mining products exported.
 From \$9,000,000 to \$58,000,000 in forest products exported.
 From 33,000,000 to 82,000,000 population.
 From \$17,000,000,000 to \$100,000,000,000 total national wealth.
 From 2,100,000 to 6,000,000 farms.
 From \$8,500,000,000 to \$22,000,000,000 total value of farm property.
 From \$1,500,000,000 to \$4,500,000,000 annual value of farm products.
 From 10,000,000 to 250,000,000 tons of coal produced annually.
 From a few thousand to over 10,000,000 tons of steel produced.
 From 23,000,000 to 2,900,000,000 gallons of petroleum produced.
 From less than 1,000,000 to over 14,000,000 tons of pig iron produced.
 From 7,500 to 275,000 tons of copper produced.
 From less than \$200,000,000 to nearly \$1,100,000,000 total worth of minerals produced.
 From less than 150,000 to 525,000 factories.
 From less than 1,500,000 to over 6,000,000 factory workers.
 From \$400,000,000 to over \$3,000,000,000 factory wages and salaries yearly.
 From \$2,000,000,000 to over \$14,000,000,000 in factory products yearly.
 From \$47,000,000 to \$82,000,000 worth of gold produced.
 From a few thousand dollars to over \$75,000,000 worth of silver produced.
 From 4,800,000 (1860) to 10,000,000 bales of cotton produced.
 From \$115,000,000 (1860) to nearly \$400,000,000 worth of cottons manufactured.
 From \$525 to \$1,300 national wealth per capita.
 From \$1,250,000,000 to \$2,500,000,000 total value of farm animals.
 From \$204,000,000 to \$1,025,000,000 total imports.
 From \$243,000,000 to \$1,420,000,000 total exports.
 From \$2,248,000,000 (1867) down to \$914,000,000 public debt.
 From \$146,000,000 (1866) down to \$25,000,000 annual interest charges.
 From \$4.12 (1866) down to 32 cents annual interest charge per capita.
 From \$25,000,000 to \$782,000,000 gold and silver in the Treasury.
 From \$595,000,000 to \$2,367,000,000 total money circulation.
 From a storm-tossed, war-swept, disunited country to a peaceful, progressive, glorious united Union.

WALTER J. BALLARD.

SCHENECTADY, N. Y., U. S. A., June 12, 1904.

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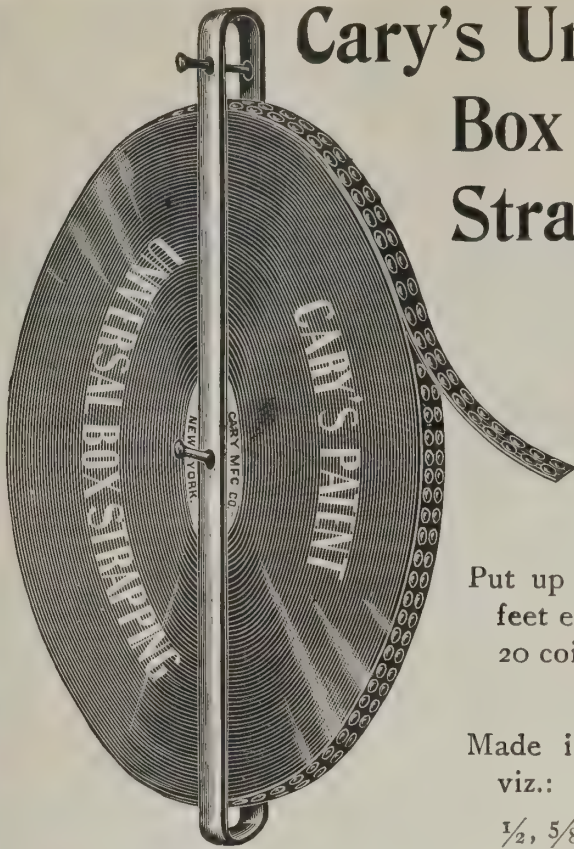
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Mammoth Pictures Taken by Huge Camera.

TAKING pictures life-size is now possible in America through the development which has been made in this country in photography. Negatives 8 feet long and about 5 feet in width are made with the aid of a camera, which is undoubtedly the largest ever constructed. The idea of making such a camera was suggested in an attempt to produce a view of a train on an American railroad, and the first attempt to obtain a photograph was so successful that the locomotive and all of the cars were included on the plate.

Owing to its unusual dimensions the camera was built according to a special design, requiring nearly three months to complete. In the construction of the mammoth bellows over forty gallons of cement, two bolts of wide rubber cloth, and 500 feet of one-fourth-inch whitewood were used. The bellows is divided into four sections, and between each section is a supporting frame mounted on small wheels, which run on a steel track, the back, supporting the plateholder, being operated as easily as an ordinary camera.

As the plateholder, when loaded, weighs no less than 500 pounds, it really forms a separate portion of the camera, and is so large that it will accommodate a man, in addition to the plate. The light is shut out by means of a curtain, consisting of three thicknesses of opaque material fastened to a wooden framework. The curtain is attached to a ball-bearing roller in such a manner that the mere pressure of a button will roll it up rapidly as the ordinary window-curtain when the picture is to be taken.

When it is stated that ten gallons of cement and 80 square feet of ash-wood were required in make the framework, an idea of its dimensions can be gained. Owing to the size of the plate care must be exercised in freeing it from dust, otherwise an imperfect picture would be produced, so a novel plan is employed to remove the dust particles from its surface. In the rear of the holder is a door, which can be opened at any time as the curtain within protects the plate from the light. Providing himself with a camel's-hair duster, one of the "camera squad" enters the holder. Before rolling up the curtain, however, the cap of the lens is removed and one composed of ruby glass substituted, which allows sufficient light to penetrate the holder to clean the plate without difficulty. Then the curtain is rolled down, the ruby glass removed and the cap is replaced.

The word "squad" can be very appropriately used in connection with the camera, as it requires about twenty men to carry it and lift it into position, while it is provided with a special train when necessary to take views at a distance. Including the plateholder it weighs 1,400 pounds.

When the camera is adjusted for taking a picture, the photographer takes his place by the side of the lens, while an assistant prepares to operate the plateholder. When he is ready to make exposure, the photographer signals the assistant, who presses the button that controls the curtain-holder. Then the cap is removed from the lens in the same manner as when making an ordinary exposure, but the lenses are of such size that much more time is required than in ordinary photograph-making. One is of the wide angle type, having an equivalent focus of $5\frac{1}{2}$ feet, while another is provided of the rectilinear type, having 10 feet equivalent focus. On a clear day, when the sun is shining directly on the object to be photographed, an exposure of about two and a half minutes is sufficient to produce the image of an isochromatic plate. For an ordinary negative from one and a half to two minutes are required.

To develop the plate requires no little care, owing to its great size, and tanks have been made purposely to accommodate it while the developing solution prepared represents over a gallon of the liquid. The views which have been obtained, however, are considered by experts to be remarkably clear and brilliant, indicating that photography even on such a mammoth scale can be done successfully.

American Makes Photograph with Pitchblende.

A PHOTOGRAPHER of Minneapolis, Minn., U. S. A., recently made an interesting experiment with radio-active ore. A photograph was made from the light emitted by the ore, in a closed box, which excluded all other light. The resulting "shadowgraph" is similar to those made with the X-ray, and proves the strength of the light rays emitted by the ore.

The ore was brought to Minneapolis by E. P. Townsend, of Collinwood, who recently returned home, after several years spent in northern Colorado. The region is, so far as known, the only place in the United States where radio-active ore exists. It is found in two mines—the Wood mine, of which Mr. Townsend was formerly one of the lessees, and the Kirk mine.

The ore from which the photograph was made is pitchblende, containing 55 per cent. uranium. This ore is worth \$3.50 a pound. The ore holds considerable copper and other minerals, with a trace of gold. Radium is generally found in uranium-bearing ore. It is only within a few months, however, that the presence of radium in the ore from these mines was demonstrated by the investigations of a professor of the University of Colorado. Thus far no attempt has been made to extract the radium, but the companies operating the two mines plan to do so. The radium salts can be extracted without impairing the value of the ore for the extraction of other constituents.

The photographer who made the radium picture experimented several days in his efforts to obtain a good photograph. He first made the mistake of underestimating the amount of light emitted by the ore and gave the plate too long an exposure. This was a natural mistake, as the light from the pitchblende is not visible to the naked eye, even in the dark. The photograph

made was given forty-eight hours' exposure, and this was evidently too long for perfect results. In taking the photograph he laid a key and two coins on a dry plate, and then upon these a piece of ore, 4 inches long, 2 inches wide and a little more than an inch thick, weighing $1\frac{1}{4}$ pounds. He tried the experiment of printing from a negative by means of radium light, used as natural light, but found that the rays passed through the film and left no impression, acting similarly to X-rays.

New Electric Furnace Pleases Chemists.

HARMON V. MORSE, professor of analytical chemistry at Johns Hopkins University (U. S. A.) and adjunct director of the chemical laboratory, has perfected an electric furnace which, it is believed, will revolutionize practical laboratory work in chemistry. The furnace is the result of long and hard work on the part of Professor Morse, and his invention is one of the important scientific achievements of the year. Professor Morse's furnace was shown before the chemical seminary at a recent meeting at the university. He and his assistant, Dr. J. C. W. Frazer, were congratulated by President Remsen and the scientific faculty, to whom he spoke for an hour about the apparatus.

Heretofore gas has been the only source of heat for experimental work in the chemical laboratory. For a long time scientists have been trying to devise some sort of economical electric heater. That satisfactory results may be obtained in the heating necessary in laboratory practice four conditions must be satisfied: First, the heat must be developed economically; second, it must be possible to obtain definite temperatures; third, it must be possible to maintain constant temperatures for long periods; fourth, products of combustion must not be allowed to come in contact with the substances heated.

Chemists have long seen that the solution of this problem was to be found in the electric current, which yields no products of combustion, and can be developed at a constant and regular rate. Thus far, however, no one had been able to make it a practical substitute for gas.

Professor Morse's electric heater comprises, first, an ordinary copper oven incased in a box, doubly lined with asbestos, with an air space between, the whole covered with aluminum paint, which is not affected by high temperatures, is a very poor heat radiator and preserves the asbestos from shredding. This arrangement practically prevents any loss of heat by radiation.

The source of heat is in the stove placed within the copper oven. The stove is constructed of parallel slabs of soapstone coated with graphite, the soapstone being unaffected by heat. The graphite is evenly distributed over the slabs of soapstone that the heat may be developed uniformly over the surface. The use of soapstone in constructing the heater is the key to the apparatus.

The electric furnace has been found to work admirably, and can be operated at a cost of less than one cent a day. A constant temperature of 150 degrees can be obtained for eight hours at a cost of three-fourths of a cent. It is probable that Professor Morse's furnace will displace the old gas furnaces now in general use, and it is certain that it will add much to the exactness with which chemical processes may be carried out.

Germany's Railroad Show at the World's Fair.

OUR German cousins are well in evidence at the American World's Fair, and then we shall have occasion to mention some of the chief features of the displays which are attracting favorable notice. One of these is the German Government railroad exhibit, which shows the block system and switch signals now in use in Germany. More than 1,500 feet of track, in the construction of which both iron and wood ties were used, have been laid. There is a station-house, two switch-towers and one intermediate block-signal post. One of the switch-towers is fitted with mechanical and one with electric signal apparatus. The block system makes it impossible for a train to run into an open switch, or for one train to run down another between stations. The double-track system prevents collisions. By means of electrical apparatus all switches, except the one opening the desired track, are locked, making an error on the part of a switchman impossible. As the last wheel of the train passes, the switches are all released by rail contact, making way for the next train.

At intervals of about seven miles are placed intermediate block posts, with a similar signal and switch apparatus. By automatic arrangement the levers are all locked, so that one train cannot leave the station until the train ahead has passed the next post, thus preventing one train from running down another. All the material used in construction was brought from Germany.

American Leather and Shoes in Belgium.—United States Consul J. C. McNally, of Liege, Belgium, notes the importation of considerable quantities of American leather into Belgium, and says there is a constant demand for American shoes, concerning which he reports: "I find it impossible to secure a pair of fine American shoes either in Brussels or Liege. I would think that in such large cities an American shoe house would do a good business, as shoes of United States manufacture are acknowledged to be superior to all others."

Our Engines for Japan.—The Japanese Government has given to the American Westinghouse interests contracts for three large engines for shipment to Japan, where they are intended to be used in the power plants of ship-building yards and in one of the principal arsenals in that part of the world.

Results of the Oil Fuel Investigation.

NAVY officers of the United States have just concluded an interesting investigation into the usefulness of oil as fuel. Experiments began more than two years ago. The attention of the entire manufacturing, railroad and steamship world was arrested by the extravagant claims made for petroleum fuel. Its steam-producing quality was described as far greater than that of coal. Boiler manufacturers were invited to submit boilers for the test of oil fuel. Many inventors of burners especially adapted for oil consumption installed their burners in turn at the plant established in this city.

The first year was devoted to a series of experiments with coal. Data as to the steam-producing ability of coal and its effect upon the boilers were obtained and proved of great value in comparison with the results of the oil tests the following year. Commercial interests all over the United States sent experts to observe the progress of the tests. Railroads, especially those operating through countries rich in oil, were anxious for information. Coal men watched these experiments with anxiety, inspired by tales of the coming overthrow of coal by oil for marine and mercantile purposes.

The naval side of the problem was given careful attention, the question of stowing oil on warships in such manner as to prevent explosions from the gases generated proving a complicated problem. The combined expenditures of the Navy Department and manufacturing interests in connection with the experiments aggregated \$250,000.

While the report deals largely with the military and marine features of the oil fuel problem, enough is known of its character to warrant the statement that the industrial and manufacturing interests of the world will receive the most important and immediate benefits from publication.

Because of the great importance which Rear-Admiral Melville and other naval officers attach to this report it is believed the experiments will finally result in great changes in mechanical establishments in the line of economy. The fuel problem is one that concerns the relative naval strength of the United States, and this feature has received special consideration in the report.

Inventive minds have been at work for more than twenty years trying to discover methods by which petroleum oil might be used as fuel, but up to the present time no device has been offered by which it could safely be used at a cost below that of coal.

The anthracite coal strike in 1902 brought out an unusual number of patents, but none has come into general use. During that year the Patent-Office was overwhelmed with applicants in that particular line, and before the coal strike was settled more than 1,300 patents for liquid fuel burners had been granted. Many more have been granted since.

A board of naval officers began exhaustive experiments with oil fuel in 1900. Tests were made of Texas, Pennsylvania and California oils, and it was decided that the California oil contained the greatest heating qualities. Experiments were made on various large and small vessels of the navy, and, while none of these has demonstrated that oil can be used as a substitute for coal, great advance has been made and a great service has been rendered to the merchant marine.

There are many records of long voyages made with the exclusive use of oil as fuel. One British ship covered 12,000 miles in 1902 with 800 tons of liquid fuel, and in some of the torpedo-boats in the American navy oil is now being used.

There are two main plans for all the oil burners. One is a device for mixing it with steam and the other for turning it into vapor. The principal drawback of all the systems has been too elaborate and expensive apparatus.

Oil was used in many factories where coal could not be obtained during the coal strike in 1902. Up to that year insurance companies had always inserted a clause in their policies prohibiting the use of oil for fuel, but so great became the demand for the privilege to test oil fuel that this clause was left out of new policies.

Ingenuity of Our Die-Cutting Machinists

AN interesting story is told in the *New York Press*, which shows the progress made in one branch of American industry, and in a fashion discloses our methods. It seems that a few days ago a young man with a love for making bets stepped into a design-cutting plant.

"I'll bet you a dinner," he said to a friend who had charge of the die-cutting machines, "that you can't reproduce that on steel with one of your machines and make it one-quarter the size it is now." He picked up a bronze campaign medal about two inches in diameter. The medal was one of many varieties seen at the time of the last Presidential campaign. It contained etched and in relief around the outer borders the busts and heads of all the Presidents of the United States. In the center was the engraved representation of the bust of President McKinley.

The medal was fastened on the machine, the wheels were set revolving, and in about eight hours of actual grinding the medal had been reproduced on a steel die less than one-eighth of an inch in diameter. It was so small that the design on it could not be distinguished without the aid of a powerful microscope; but under the lense the heads and expressions on the faces were seen to be perfect reproductions of the designs on the original medal.

All the big American silverware manufacturers now make their designs by these machines. A set of toilet articles richly backed with silver decorations in high relief gets its beauty from the freedom with which the designer is allowed to work by reason of the die machines. Hand-mirror backs,

match-safes, silver penknife handles and a great variety of other relief-stamped silverware is made from a die turned out by machinery.

A remarkable story is told about the work of the die machine in bringing the bronze and metal reliefs of the seal of New York State up to its present high standard of beauty, grace and art. A young man who was employed as traveling salesman for a large silverware concern came in from the road one day, kicking strenuously about some of the designs in his sample-case.

"See here," he said to the head of the house, "this is supposed to be a reproduction of the seal of New York State." He held up a silver disk about four inches in diameter, mounted in a dark-stained wood frame. "It doesn't look enough like a seal to be called one. Look at these lines—stiff, cramped, ugly. I can't sell pudgy designs like that."

"Well, what are you going to do?" asked the head of the house.

"Do?" replied the salesman. "Why, make the die by the reducing machine. Get the seal made in a large bronze casting and reduce it to a small die on the machine."

They did it. They have been doing it ever since. Other houses took up the idea. Gradually the cramped, stiff designs began to disappear from the market. They had to. Thus the seal of the State of New York as it now appears in the majority of metal decorations is one of the best executed and handsomest seals of any State in the Union.

Uses for Wireless Telegraphy in Farming.

WIRELESS telegraphy is applicable to various agricultural purposes, says a writer in *Electricity*. First, it is natural that it would be used by farms or isolated distant villages as a means of intercommunication, or communicating with market cities. It might also be used to accomplish vast results by furnishing information of every character to help out agriculturists in their work and in their commercial transactions. There was the objection to be met from the start—specialists were needed. They were needed, but they are no longer required. It suffices to set up a transmitter provided with a wheel, on which the dispatch is "composed," having a double row of characters, one row containing ordinary letters, the other, the equivalent of the Morse code. When the despatch is composed it is transmitted automatically by tripping a clockwork mechanism. This device is objectionable, from the fact that the message is received in Morse characters, but if this be a real hindrance, it is only necessary to use the device which prints in ordinary characters. The two other applications for wireless telegraphy to agriculture consists of something further than the transmission of messages. Its first purpose is to prevent frosts. In certain sections of France frost sometimes entails losses of from \$5,000,000 to \$8,000,000 a year. A company in Paris installs a central station provided with a thermometer and a wireless telegraph transmitter, so arranged that when the thermometer falls rapidly during the night under a cloudless sky an alarm-bell is made to ring, which notifies the station watchman. It is then only necessary for him to operate the transmitter which governs a series of radiating conducting circuits. When these circuits are closed fire is started under combustible materials which have been prepared in advance. These fires are simultaneously started at a large number of places; artificial clouds are thus formed, which serve as protective blankets for vegetation. It would be very easy to amend this method by tripping a switch by means of the thermometer, causing a spark by a circuit through a coil and kindling the fire by means of a little powder. Wireless telegraphy is also used to warn farmers in advance of coming storms.

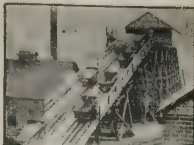
An Automatic Milking-Machine to Be Tested.

IS the automatic milking-machine to be added to the cream-separator as an important extension of the line of goods sold by the American farm-implement trade? Numerous attempts have been made by ambitious inventors in the past to design an apparatus to take the place of the dainty milkmaid of the poets of a generation or two ago and the present-day unpoetical hired man, but they were all of the Darius Green order of practicability, and are as dead to fame as the names of their hopeful inventors. However, now comes a cow-milker company with a proposition to the Minnesota State Dairy Commission, offering to install such a machine for a test of six weeks or two months. Commissioner McConnell, while said to be favorably impressed with the apparatus, has not yet decided to approve it, but will probably give it the benefit of a State test in one of the dairies near Minneapolis, U. S. A. The machine is operated by a gasoline engine by means of an exhaust pump and vacuum. The inventor claims that it will perform the work of six men, or, in other words, that with one man to operate it, six cows can be milked at the same time, and the work performed more rapidly and more thoroughly than by hand. If it should prove to be successful in its working and entirely agreeable to the cows, the machine will not only open up vast possibilities for the implement men in connection with their present rapidly growing trade in separators and other farm dairy appliances, and for the dairy farmers themselves, but its general introduction will undoubtedly prove a potent factor in solving that much-mooted problem, how to keep the boy on the farm. For, unless the average farmer boy differs materially from the writer when he was a boy on the farm, the inevitable milking time is one of the strongest incentives to fire a boy with an ambition to abandon the healthful, honest and profitable life of a farmer, and to fly to ills he knows not of which lurk within the delusive and disappointing walls of the city. The world will watch with interest the progress of the automatic milking-machine.—*Texas Trade Review*. Our readers will be advised of the results of the tests.



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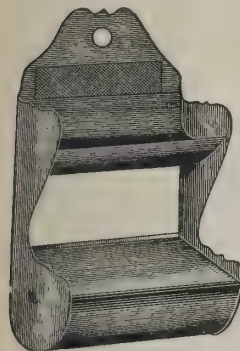
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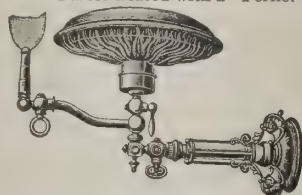
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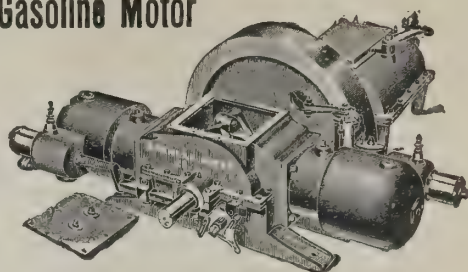
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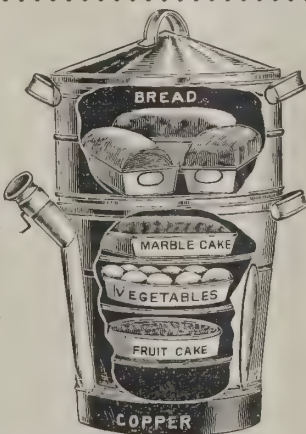
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To Telegraph Sixteen Messages on One Wire.

TO telegraph sixteen messages simultaneously over a single wire has now been made possible through an invention of Dr. Michael I. Pupin, professor of electro-mechanics in Columbia University, New York City. When asked by a reporter if there could be any doubt as to the commercial practicability of his device, Dr. Pupin replied: "Absolutely none whatever."

Probably the largest of a telegraph company's items of expense are those incurred in the installation and maintenance of wires, and if one, with Dr. Pupin's system, can be made to do the work of sixteen under old-time methods the saving in expense should be great. Heretofore the maintenance of four circuits on one wire has been the limit of the multiplex machines invented. An octoplex machine was set up by the Western Union company, but it could not be operated successfully. Duplex and quadruplex systems now are in use by the two chief American companies, but Dr. Pupin's device, in addition to permitting of the maintenance of a much larger number of circuits, is understood to have a great advantage over them in point of simplicity.

The Pupin system differs chiefly from the multiplex systems now in use in that it operates with an alternating instead of a direct current. It might be described as a system of tuning, the principle being the same as that which underlies all the wireless telegraph plants. The idea originated with Dr. Pupin. As early as 1894 he patented a general system of tuning as applied to telegraph operations, and when Marconi began his wireless experiments in 1896 he had to purchase the right to its use from the Columbia professor, as every other inventor working in the wireless field has had to do since.

Dr. Pupin devised his multiplex machine in the laboratory of Columbia University, and there is a model of it now on view in the lecture room of Havemeyer Hall, where he recently explained its workings before the New York Electrical Society. Attached to the generator are devices for giving out alternating currents of various frequencies. Instead of the current passing directly along the wire, as is the case with the ordinary telegraph system, these devices cause it to proceed in undulations, or waves.

The frequency of the waves has reference to the number that are formed a second. The model at Columbia University forms alternating currents of only six different frequencies, and therefore will admit of the transmission of only six messages simultaneously, but the inventor says that by the addition of the necessary parts to the machines it is just as easy to transmit sixteen as six. If sixteen circuits are to be operated the machine will make it possible for sixteen currents, each vibrating in waves of distinctive lengths, to pass along the wire at once, and when they reach their destination they will find waiting for them sixteen receivers, each tuned to respond to one set of vibrations and no other.

If a piano is left open and on a violin a note is struck that is of the same pitch as one of the strings in the piano, the piano string will vibrate in sympathy, and the same principle exactly governs Dr. Pupin's system of telegraph tuning. In other words, each receiver is electrically tuned to respond to a certain pitch, and in this way the various currents passing, superimposed upon one another, along the wire are separated and diverted to various sounders, the ordinary Morse sounder as well as key being used.

Dr. Pupin's device is the first wire telegraph system to make use of alternating currents for long distances, the theory having been that it would not work for a greater distance than 200 miles. His invention has the great merit of "rectifying" the current before it reaches the sounder—that is, the alternating current is passed through a machine which changes it into a direct current and thus greatly increases the distinctiveness of the signals.

It is expected by Dr. Pupin that his system will permit of the use of a smaller wire, and thus further reduce the expense of telegraph operations, but he said last month that this possibility had not as yet been demonstrated. The model now at Columbia University is to be sent to the St. Louis Exposition, where it will be on view in the pavilion of the United States Patent-Office. It is, of course, impossible in the case of a model to stretch more than a few feet of wire between the transmitters and the receivers, but in the center of the line Dr. Pupin has a device which makes it equal in capacity, inductance and resistance to 400 miles of wire, so that the workings of the system over a long distance can be demonstrated practically.

New Uses in America for the Telephone.

CLEARLY and sweetly the words of the famous old hymn, "How firm a foundation," came to the ears of the patients in the Samaritan Hospital, Philadelphia, U. S. A., on a recent Sunday. Dr. Russell Conwell had caused the hospital to be connected with the Baptist Temple, in that city, by means of telephones, and, with megaphones strung in front of the pulpit and receivers in the hospital wards, the singing of the chorus and the words of the sermon were distinctly heard by the patients.

The telephone company undertook the contract to place telephones in all the wards of the Samaritan Hospital, of which Dr. Conwell is the president, and to hang a string of megaphones in front of the platform at the church. For those patients who were too weak to hold the receiver to the ear head attachments were provided, so that without the slightest exertion on their part the services of the temple could be heard almost as plainly as though they occupied seats in the church. The voice of the preacher came strongly and clearly over the wire, every word caught by the megaphones and carried to the delighted patients at the hospital. The singing to the accompaniment of the great organ was so realistically close to the ears of the hospital inmates

that many joined involuntarily in the exercises, scarcely realizing that they were a long distance from the scene of the services.

Another innovation in telephonic usage is the communication between conductor and engine-driver on moving trains and the connection of the train with business houses in places where a temporary stop is made, so that passengers may talk to friends or customers without the necessity of leaving the train at all. This idea, tried as an experiment on a Western road and successfully carried out in course of a recent trip of officials of the Pennsylvania Railroad, promises to come into general use on the railroads of the country.

The advantage of telephonic means of conversing with the engineer in his cab, instead of reaching him by a slow and ponderous system of signals, is too obvious to need comment. The great advantage that will appeal to the general public is the possibility of saving time by telephoning from the train to business or private houses when the cars are at a standstill in stations along the line. Thus, a commercial traveler who has only a few connections in a small town and thinks he can do better by going straight on to the next, but still desires to give his customers a chance to know of his presence, can do so by having the car telephone switched on to the office telephones. While the engineer is using his oil-cans in the front of the train the passengers may be talking to their business friends in the town. If it seems best to alight and stop over night the commercial men may then do so. If it appears to be only a waste of time the trip may be continued to the next town.

Still another new idea in telephone business is the calling of early toilers and those who wish to catch trains in the small hours. There is no alarm-clock to beat the telephone, for it continues ringing until the sleepy one gets out of bed and stills its voice by removing the receiver from the hook. Then the operator knows that his duty is done and stops ringing. One of the telephone companies has found this branch of business so profitable that a regular department has been organized for the express purpose of calling customers in the morning. A telephone of the ordinary kind is placed at the bedside, and the simple process of "calling" is to keep ringing at the hour agreed until the response shows that the alarm has served its purpose.—*New York Tribune*.

Radio Vibrator Has Great Possibilities.

AN American invention which, it is asserted, may revolutionize medical science and throw into insignificance such discoveries as radium and the X-ray, has been brought to completion in the laboratories of the Minnesota State University, at Minneapolis, U. S. A., by Warren F. Bleeker.

For years Mr. Bleeker has worked on his invention, which he calls the radio vibrator. For the last three months he has worked in the laboratory of Professor Hubert C. Carel, professor of chemistry at the university.

The instrument is based on the theory that the elements of the human body, when the body is in perfect health, vibrate in perfect harmony. When the body is in a diseased condition this normal tone is destroyed. By the therapeutical application of the radio vibrator, it is declared, the deranged tone of the body may be restored to a normal condition. The inventor does not claim for his instrument all curative power, but by actual trials remarkable results are said to have been accomplished in curing nervous diseases.

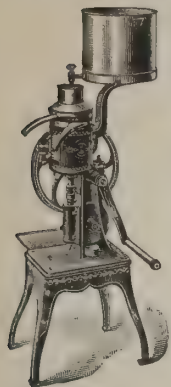
The radio vibrator is a small, nickel-plated metal box about 4 inches long, 3 inches wide and 1 inch in thickness. From one end two wires about 4 feet long extend. These wires terminate in small circular disks, which are applied to the affected parts of the body. The box contains a mysterious compound of chemicals known only to Mr. Bleeker and his assistants. The vibrations of the chemicals within the box are transmitted by means of the wires and disks to the human body. As soon as applied the action of the chemicals within the box is calculated to cause sympathetic normal vibrations in the diseased body, thus restoring the patient to health.

Energy in the Ocean.—Few people realize the tremendous power running to waste in the unharnessed waves of the ocean. According to the *Manufacturer*: "Given a wave, 40 feet high from trough to crest, it will have a width, from wave to wave, of 200 feet. That wave weighs 60,000 pounds for each foot of its length. That means 130 tons a foot. Let the wave travel at a velocity of 35 miles an hour, and that wave a mile long will develop in one second energy equal to the power generated by burning 1,250 pounds of coal. Take another view of it, and the figures show that an hour of the wave's energy, if transmitted into heat, will be sufficient to raise 604,000 gallons of water from the freezing point to the boiling point." This is all very interesting, but it is impracticable, from a commercial point of view.

Italy Needs American Electrical Machinery.—Advices received at Washington are to the effect that there is room in Italy for the importation of American electrical machinery, in spite of the many existing local shops. The report says: "The United States being far ahead of any other country in the matter of inventions and labor-saving machinery, American machine manufacturers would undoubtedly be able to create a market in Italy for their productions, especially in the line of machinery in connection with the utilization of the great water power of Italy." Electrical machinery to the value of \$60,592 was shipped from the United States to Italy during the fiscal year 1903.

American Equipment for Kolar Gold Fields.—The Mysore Government, India, has placed contracts with the General Electric Company for five large electric generators for the Cauvery Falls generating station, which furnishes power for transmission to the Kolar gold fields.

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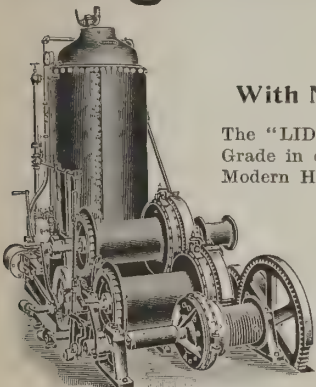
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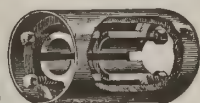
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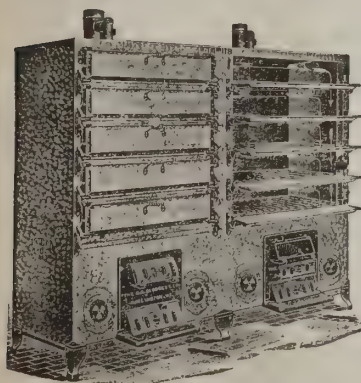


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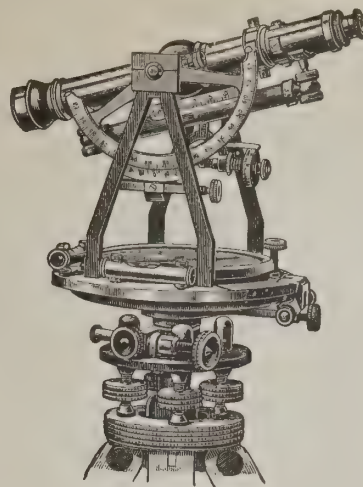
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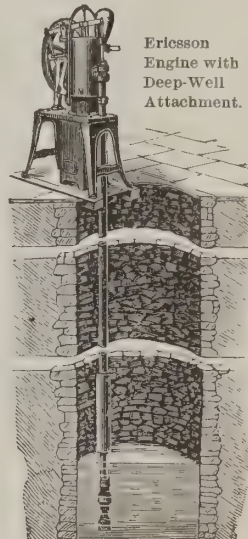
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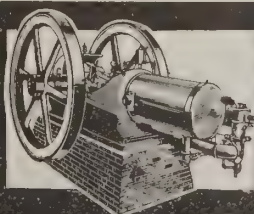
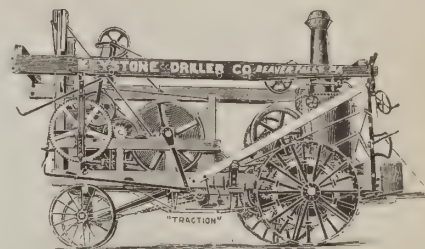
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Great Engineering Feats of American Railways.

THE reclamation of the China Basin in San Francisco, on the Pacific coast of the United States, and its transformation into modern railway terminals is another engineering project of magnitude and boldness undertaken by the Atchison, Topeka and Santa Fé Railroad management. The tract selected for the terminal development comprises fifty-four acres, and was from 4 to 15 feet below tidewater. The railroad wishes to overcome its handicap in the matter of station and yard facilities, and will spend \$2,000,000 to be next the new yards of a competitor.

Engineers' soundings found a depth of mud of from 40 to 150 feet in the China Basin, and a sea wall of solid rock must be built nearly a mile long and 200 feet wide on the top. At least 2,000,000 tons of rock will be needed to fill in the treacherous basin bottom. The basin is being reclaimed by three huge steam shovels, removing 3,000 cubic yards of earth daily from an adjoining hill to the basin. Twenty cars and seven locomotives help the shovels, and a big plow pushed by a 75-ton locomotive does the work of 100 men in scalping the adjoining hill, which is to be improved by the company as a part of the operation.

The completion of the "Ogden Cut-Off" of the Central Pacific is a triumph over combative nature in the history of American railroad construction. It has been a battle between engineers with millions of money behind them and what seemed to be a bottomless Great Salt Lake. Within a short time transcontinental passengers will ride directly across the lake, a distance of 170 miles, and President Harriman, who has decided to be on board the first train, will be entitled to the privilege by virtue of the \$4,000,000 which this single piece of construction has cost his railroad.

The work was begun nearly two years ago, and unexpected obstacles were encountered from the start. Piling dropped into the earth, as if poked through a crust; mountains of earth dumped by train-loads vanished overnight, and temporary tracks simply fell in and could not be found. Now and then the engineers thought they had gained the day; tracks were laid after prodigious labor and trains run over them. Suddenly the lake would swallow embankments, trains and their crews. The engineers believe they have at last fought their way to solid foundation, but they are still filling in and bracing their trestlework, and they will not risk a regular train service until the work has stood severe tests.

When the new line is opened thirty-nine miles in distance will be saved and between two and three hours in time. Every train over the line will help pay for the cost of the "cut-off." "Helper" engines will be discarded, less coal used, fewer switchmen, telegraph operators and section men employed, and train crews who are paid by their mileage will receive smaller wages. These and a hundred other savings are reckoned with in the economic justification of such railroad improvements as these.

The precedent set by the Central Pacific is likely to be followed by the Western Pacific, the new road building between Salt Lake and San Francisco, and a route has been surveyed across the southern end of the lake, where forewarning prompted a successful search for firmer foundation.—*Collier's Weekly*.

Care of America's Greatest Railroad Tunnel.

H OOSAC TUNNEL, the largest in this country and one of the greatest in the world, was the subject of an article in the recent issue of the *Boston Globe*, which gave some interesting information. The tunnel, with its double tracks for eastbound and westbound trains, is a part of the Boston and Maine system, and is nearly five miles long. It cost the American State of Massachusetts about \$20,000,000, but it has brought much more than that to the people who paid for its construction.

In the care of this great tunnel, so that the lives of passengers and train crews and workmen shall be safe, unusual conditions have been met and overcome. At one time it was lighted with incandescent electric lamps. The expense was large for putting in the system, and it amounted to little, practically, except in the way of advertising. The electric lights did not enable the workmen to labor without other artificial lights, or the travelers to see the sides, and the gases and dampness so interfered with the wires that the system was discontinued.

Two section gangs of eight men each are constantly employed in general trackwork. Seven men are employed as miners, as they are called, whose duty it is to work on the brick and rock overhead and see that everything is safe. In the winter season thirty-five extra men are hired, as their services are needed for "housecleaning," or whatever else may be necessary.

Then there are trackwalkers, one at each end of the tunnel, who walk from the portals to the central shaft twice each day, and two other men who do the same thing at night. There are signal lights to every 6,000 feet. Near the central shaft, on the south side of the eastbound tracks, there are two signal lights west of the shaft. On the north side of the tracks westbound are two signal lights east of the shaft. All these lights give the trainmen and workers their bearings.

At the west end of the tunnel there are great doors, with small ones in them for workmen, which are opened and closed by men whose special care it is to tend them. The doors are for the purpose of preventing the frost from playing havoc with the brickwork inside during the winter time. Few people know that at the entrances, when the small doors are opened, there is at times a tremendous suction, almost enough to throw a man off his feet.

A suction of this kind, with the mercury many degrees below zero, means intense cold. Indeed, within the tunnel, two large furnaces are kept at work, coke being burned.

Some idea of the climatic changes can be obtained by saying that after going in many hundred feet great icicles can be found, while at the central shaft the temperature is from 40 to 50 degrees above zero in the winter time and about 70 above in the summer.

How is it that trains can be run safely, and that men can work without danger in the tunnel? In the first place, there is a block-signal system that prevents more than a certain number of trains in the tunnel. Then the tracks are locked and more trains cannot enter. This number is two passenger trains going in opposite directions. Freight trains are never allowed in the tunnel at the same time with passenger trains. There are signal stations at each end, and it is not possible for trains to enter until permission is given.

Then there is a perfect telephone system in the tunnel. There are a number of stations, and there are ways so that the workmen can attach instruments and converse over the wires when necessity requires without going to a station. On account of dampness it is necessary to keep a lighted lamp inside each telephone box, so that the heat will keep the temperature right for the instrument.

When new rails are being laid, or the construction work is more than simple repairs, it is done at a time when there is little traffic, and for the few hours necessary only a single track is used, the men working on the other. Of course, at such a time the block system is looked after with a greater closeness, and only a single train is allowed in the tunnel at a time. There are crossovers for trains at each end. The life of steel rails inside the tunnel is only five or six years, about half of the time outside. In others words, the gases and other substances are fatal to steel, but preserving for wood.

One of the most interesting operations inside the tunnel is the yearly housecleaning. This is always done in the winter, when there is less outside work. Preparatory work is done during the week, and then on Sunday nights, when traffic is light, the sand, coal sparks, cinders, soot, rock, ties, etc., are taken out in great double drop side cars, which have a great capacity. Some one has been romancing to the effect that so much soot gathers in the tunnel that it is necessary to use long poles with scrapers and brooms to get it off from the sides and tops. Foreman Byrnes says this is not so. The sides and top are reasonably clean, he says. The accumulations come from the sand-boxes on the engines, cinders and coal, loose rock which has been taken down, and old ties which have worn out.

About fifty men were employed this year in housecleaning, and the record of debris taken out and the number of feet cleaned was as follows: November 22d, nine cars, 2,300 feet; November 29th, eight cars, 2,200 feet; December 6th, ten cars, 3,700 feet; December 13th, ten cars, 3,900 feet; December 20th, nine cars, 2,700 feet; December 27th, seven cars, 2,500 feet; January 3d, ten cars, 3,900 feet; January 10th, seventeen cars, 2,600 feet—a total of eighty carloads and 25,031 feet, the length of the tunnel. About 75,400 cubic feet of dirt were taken out and dumped west of Williamstown, where grading was needed. Once a year is often enough for doing this work. Foreman Byrnes and his men take as much pride in keeping the great tunnel neat and in order as does the most careful housekeeper.

Oil-burning engines are being used to a certain extent in order to avoid smoke and gas. In other words, the regular coal-burning engines do little of the work going through the tunnel when an oil-burner has been attached in the yard.

The time of trains running through the nearly five miles is from seven to ten minutes for passenger trains and from twelve to fifteen for freight trains.

On top of the mountain is a great revolving fan, operated by electricity generated in North Adams, about five miles away, requiring the services of two men. It is only operated during ten hours of the daytime. This great fan, 16 by 18 feet, assists the natural draught in sucking the smoke and gas from the tunnel. It cost a bit of money to put it in, and it costs to maintain it. It greatly assists, particularly in the summer, in clearing the tunnel of smoke and gas. No passenger has ever lost his life in the tunnel since it was opened twenty-nine years ago.

American Furniture Industry.—The increasing popularity of American furniture abroad will make this item from the *World's Work* of interest to our readers: "Grand Rapids, Mich., U. S. A., gradually acquired the bulk of the manufacturing business, until now it has practically no competitor. There are 10,000 skilled woodworkers in its forty factories, the value of whose annual output is about \$12,000,000. Great quantities of mahogany are imported from Cuba, Santo Domingo, Central America and Africa, and in many houses in this city entrances and even porches are built of rare woods. Skilled designers, employed by manufacturers in other cities, live in Grand Rapids, in order to work in a furniture atmosphere." It may be added that considerable quantities of the imported woods are sent back to whence they came, after having been transformed into shapely and salable articles of American furniture.

American Pianos Wanted in Brazil.—Louis H. Aymé, United States Consul, Para, Brazil, reports that there appears to be a market in his district for a good cabinet piano if it fulfils the following requirements: It must be an upright piano, purchasable at Para at from \$500 to \$750. It should be put together, as far as possible, with screws, or, at least, not with glue; it should possess a rich, full tone, which should be permanent, not becoming "tinny," and it must be able to withstand a very hot and very damp climate.

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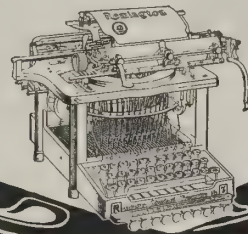
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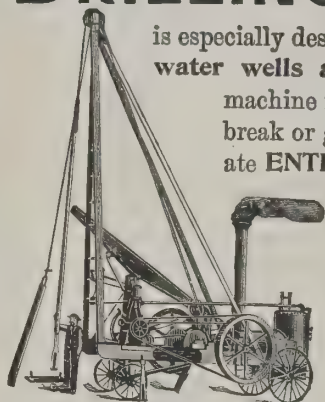
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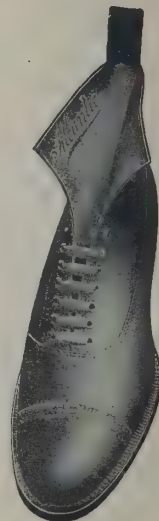
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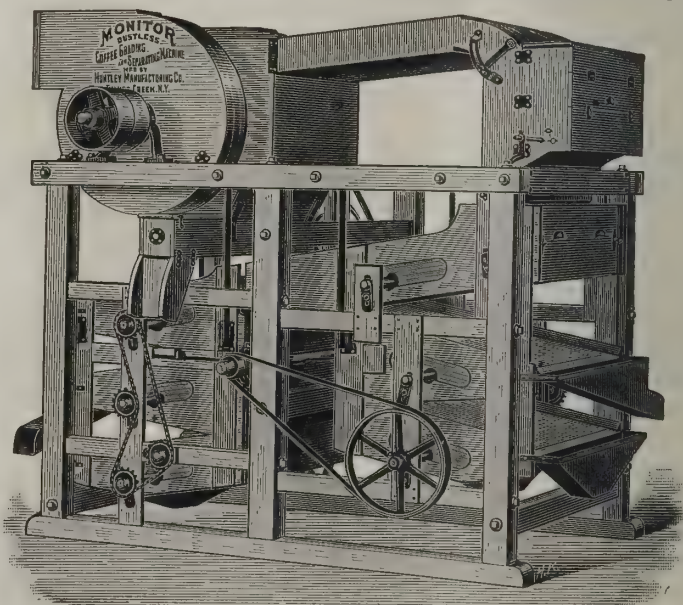
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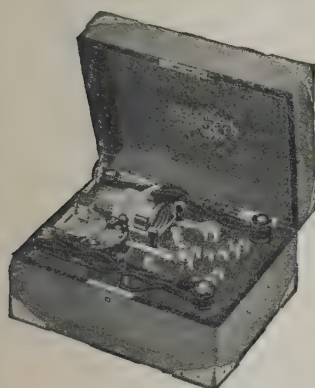
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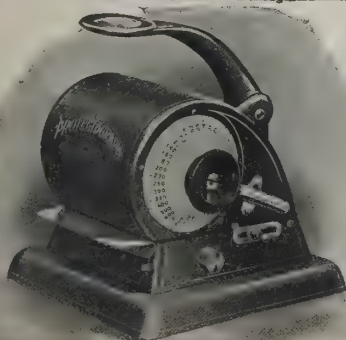
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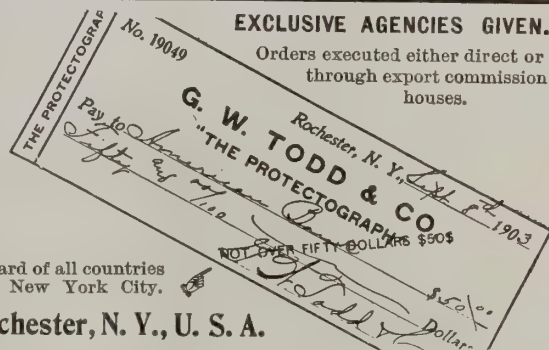
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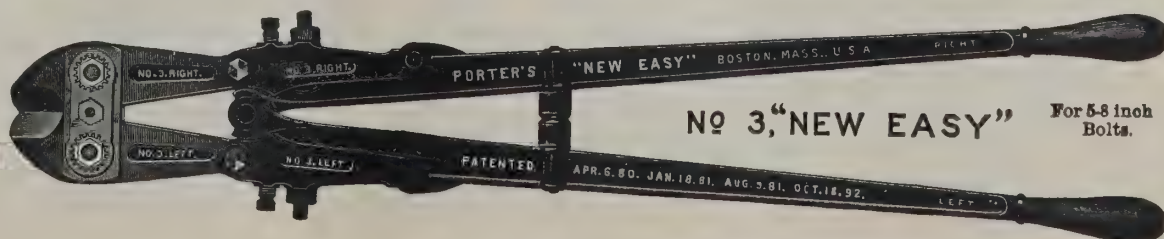
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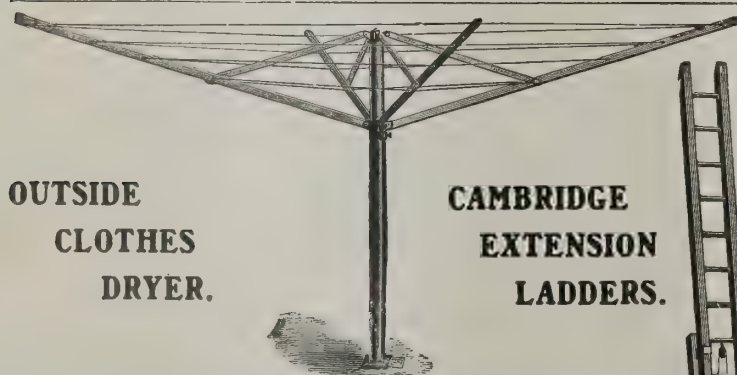


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I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

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Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

A PAINT THAT PROTECTS.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water. MILLS EDWARD, Master Schooner "Florence Shay."

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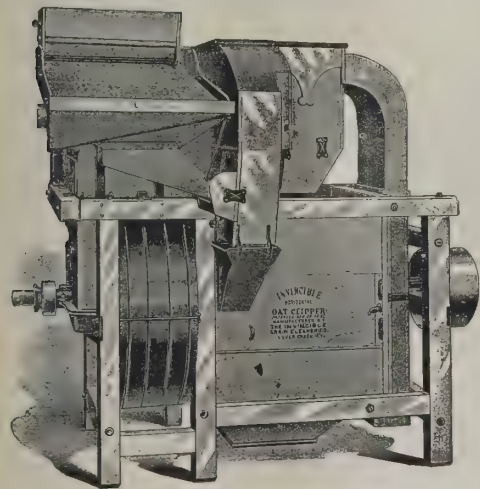
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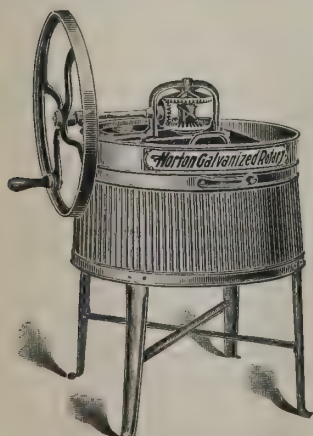
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An Oily Paste Polish for ALL Black Leathers, Also

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We are Manufacturers of over 60 varieties of Shoe Dressings, Polishes, Harness Oils, Etc.

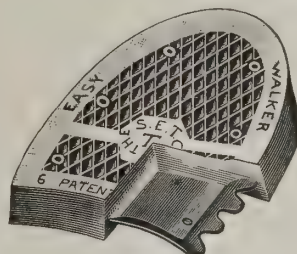
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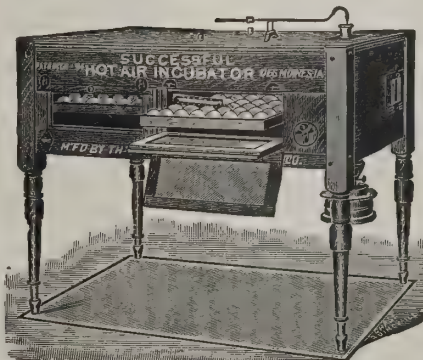
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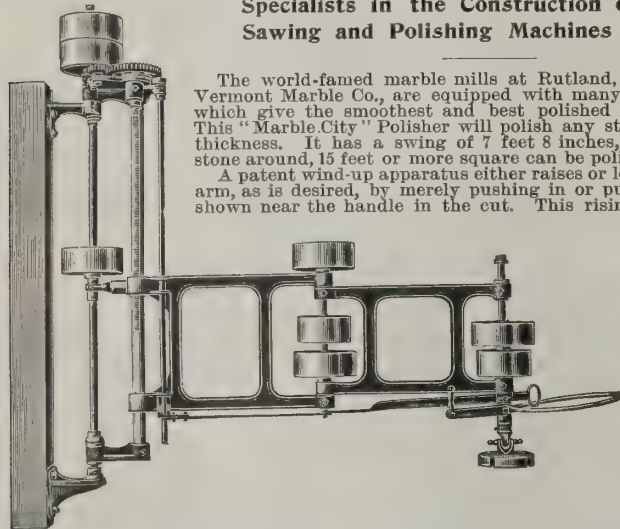
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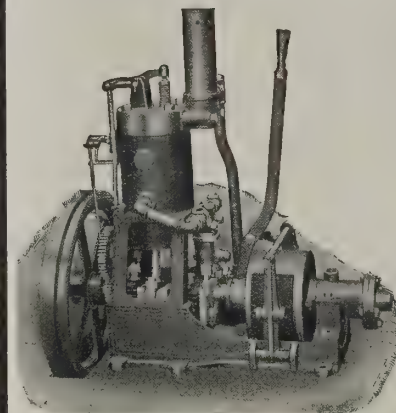


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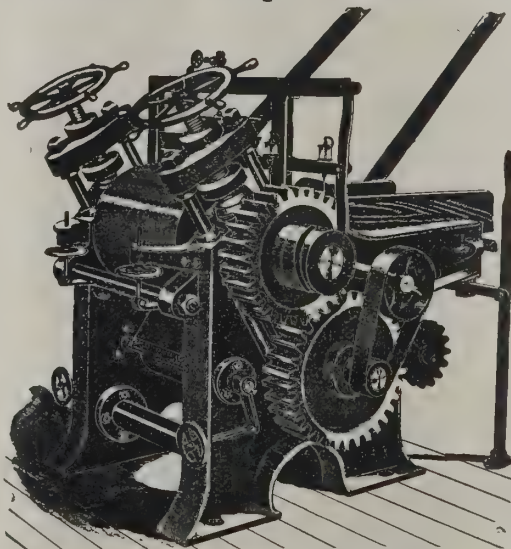
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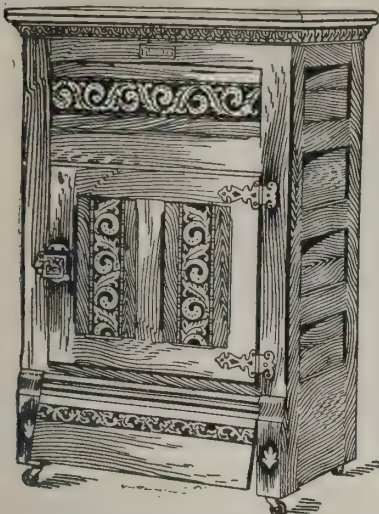
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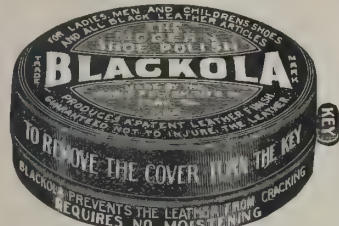
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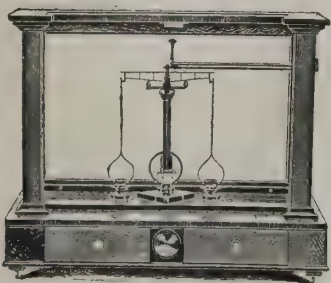
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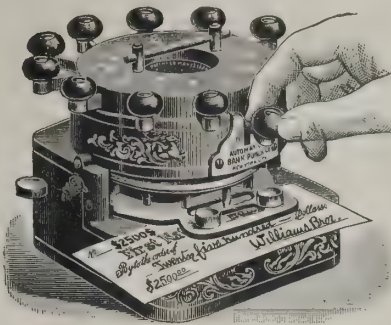
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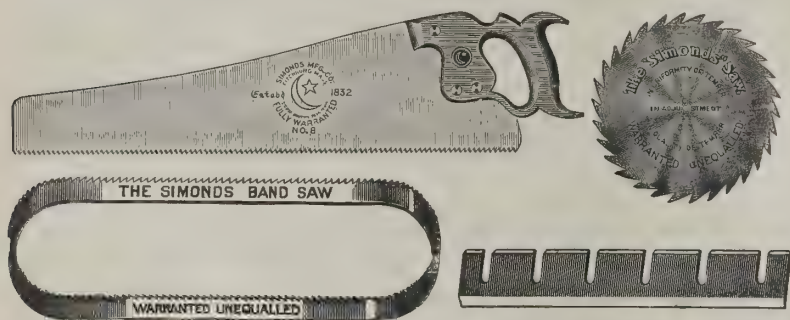
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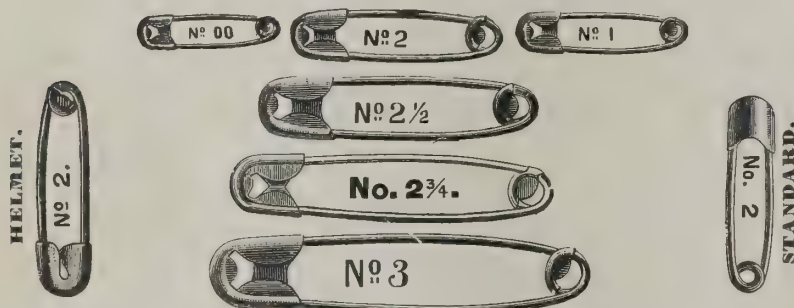
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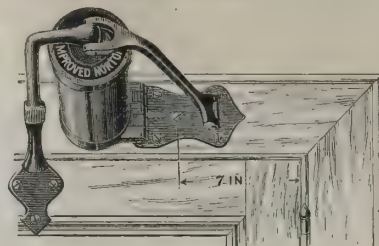
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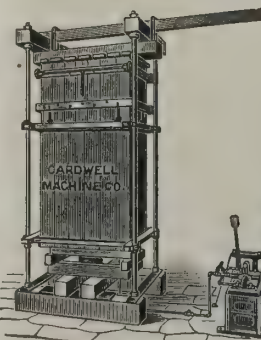


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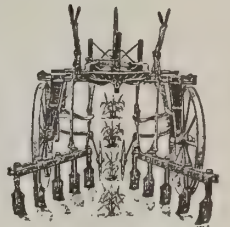
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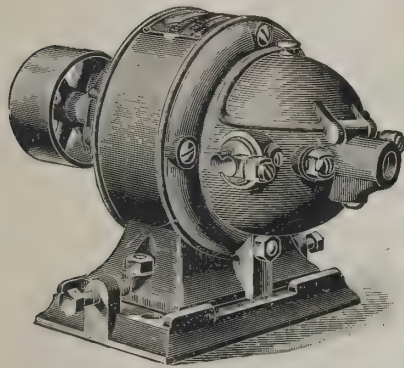
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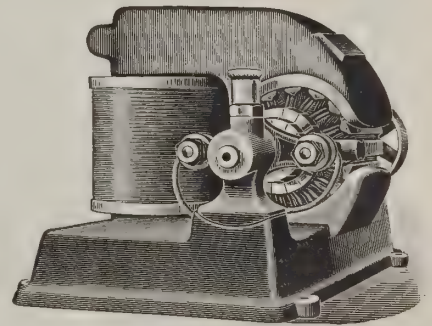
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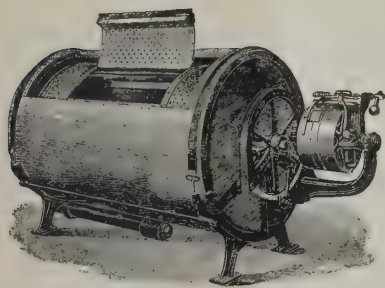
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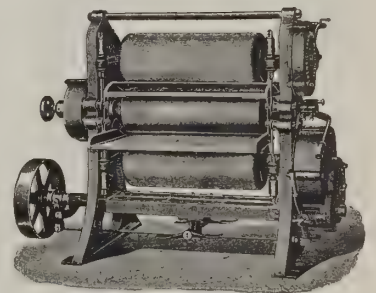
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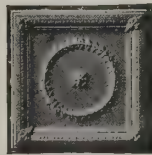
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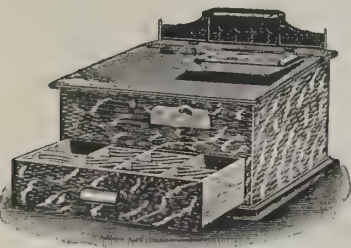
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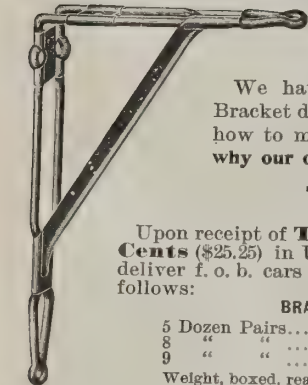
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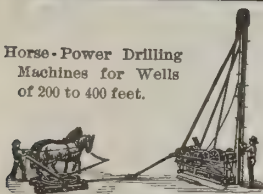
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pressure until the moment of using. Once discharged or used it can be charged again in one minute.

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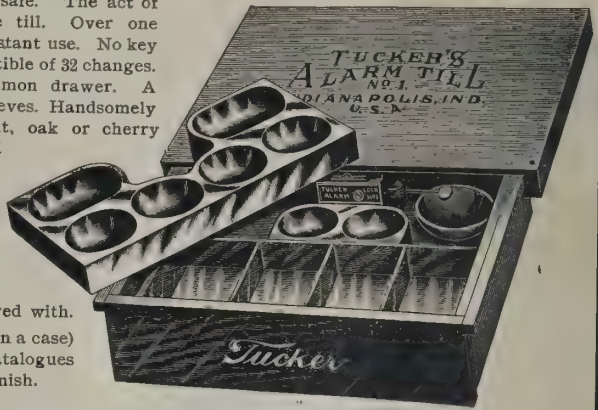


The Tucker Alarm Cash Till.

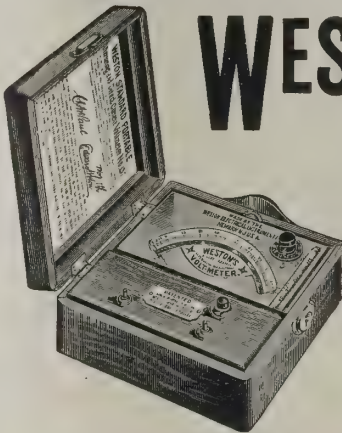
A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

As a piece of cabinet work, well worth its cost.

Sounds the alarm promptly if tampered with. Delivered (1/2 doz. in a case) free to vessel. Catalogues in English and Spanish.



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Selling Agents: John H. Graham & Co., 113 Chambers St., New York City.



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STANDARD PORTABLE
DIRECT READING

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For Alternating and Direct Current Circuits.

Are the only standard portable instruments of the type deserving this name. Write for circular and price lists.

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Waverly Park, NEWARK, N. J., U. S. A.

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London—Elliott Bros., Century Works, Lewisham.

Paris, France—E. H. Cadiot, 12 Rue St. Georges.

New York Office—74 Cortlandt Street.

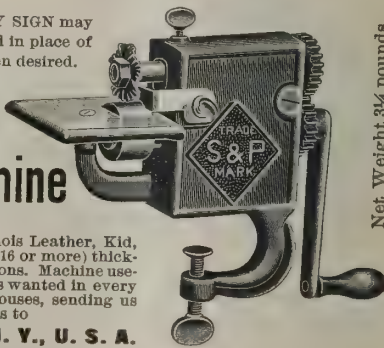


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AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.

ANY SIGN may be had in place of \$ when desired.



Net Weight 3 1/4 pounds.

The S. & P. Pinking Machine

BEST AND CHEAPEST.

Cuts fancy edge on silk or cloth. Will cut Chamols Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

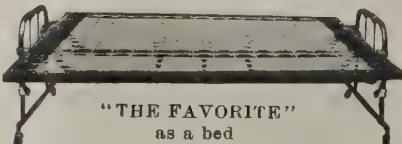
SITTMANN & PITT, Brooklyn, N. Y., U. S. A.

BATTLE CREEK IRON BED CO., Ltd.,

MANUFACTURER OF

K.-D. METAL FOLDING BEDS FOR EXPORT.

"THE FAVORITE" METAL FOLDING BED



"THE FAVORITE"
as a bed

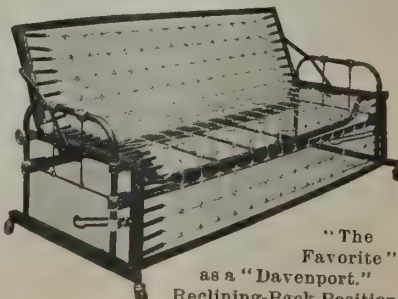
FOR FOREIGN MARKETS ONLY.

Upon receipt of \$45 (U. S. gold) we will crate, ready for transportation abroad, and deliver f. o. b. New York, 6 of "The Favorite" (Knock-Down) Metal Folding Beds. Each bed weighs 120 lbs. net; packed 2 in a crate, weigh 275 lbs. gross. Gross weight of 6 "Favorite" Metal Folding Beds, packed 2 in a crate, 725 lbs. Orders received direct or through export houses; when ordering through the latter, specify "The Favorite," and please send us duplicate of order.

Battle Creek Iron Bed Co., Ltd.,

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is the latest creation in folding beds and can be easily opened or closed by a child of five years of age. Opened ready for use "The Favorite" is a full-sized bed, being 6 feet long by 4 feet 6 inches wide. Closed "The Favorite" can be used as a "Davenport," or can be adjusted by a most simple movement to a reclining-back position, as shown.



"The
Favorite"
as a "Davenport."
Reclining-Back Position.

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The largest manufacturer of TOILET PAPER in the world.

CORRESPONDENCE SOLICITED.

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Manufacturers and
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FOR MEN, WOMEN, YOUNG MEN AND MISSES.

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Air Beds,
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Dental Dam,Dilators,
Face Bottles,
Finger Cots,
Gas Bags,
Gloves,
Ice Bags,Ice Caps,
Medicine Droppers,
Nasal Douches,
Nipples,
Nipple Shields,
Nursing Fittings,Obstetrical Cushions,
Pessaries,
Plant Sprinklers,
Plaster Bowls,
Poltizer Bags,
Rectal Tubes,Rubber Bands,
Stomach Tubes,
Stoppers,
Syringes,
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Teething Rings,Tourniquets,
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Umbrella Rings,
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Water Bags,
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And a full and complete line of Fine Rubber Goods for the Hospital and Surgical Trade. Our new Illustrated Catalogue "D" sent free on application.

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WINDOW SASH CORD,
RAILROAD BELL CORD,COTTON, LINEN OR
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ARC LIGHT and TROLLEY CORD.

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THE BEST IS THE CHEAPEST:

CLOTHES LINES,

AWNING AND MASONS' LINES,

CHALK LINES, ETC., ETC.

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For Jobbers and FOUNTAIN-PEN Manufacturers.

All Pens warranted 14kt. gold with best hard iridium.
We make Imprint Pens; Imprints free on quantity orders.

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Full line Long and Short Nib Gold Pens. Send your name and let me quote you export price.

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Quality
Chocolates

The "PIPE OF PEACE."

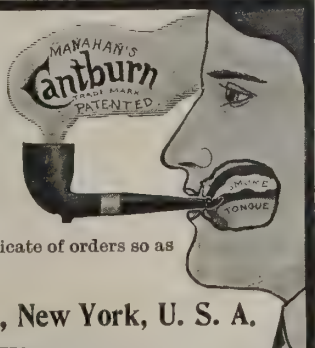
Can't burn the tongue. Always sweet, dry and clean.

Saliva can't get into the pipe, become saturated with POISONOUS NICOTINE, leak back into the mouth and give you TOBACCO HEART. No valves, absorbent piths or smoke filters used, to become filthy and spoil the flavor of your smoke, and you can smoke any tobacco.

Fine briar and hard solid rubber stem, bent or straight.

Send export orders through buying and shipping agent, and send us duplicate of orders so as to avoid mistakes.

RELIABLE AGENCIES WANTED.



The Practical Mfg. Co., 1907 Park Avenue, New York, U. S. A.

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FRESH AIR LOCK

GIVES PERFECT
VENTILATION and
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Lets fresh air in
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need it on every window. Your
children can't fall out if you use it.

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NASHUA TILL CO. NASHUA, N. H. U. S. A.

ESTABLISHED 1859



The drawer is made with Oak or Black Walnut Front, varnished and polished.

The sides, back and half-globe sliding coin cup of hard wood, finished in oil. The apartments made to accommodate the currency and coin of the country in which they are to be used. Size, 17x18 inches.

The Lock has 32 Combinations, which can be changed instantly, and CANNOT be discovered by the feeling of the finger keys. This lock is safe, convenient and perfect. The Alarm does not sound except when an attempt is made to open the drawer by an unauthorized person. This drawer is the original automatic alarm cash till of America and is now in universal use by merchants in U. S. A.

ONE-MINUTE CHURN.

From Milk to Butter in ONE Minute. NO CREAM SEPARATOR NECESSARY. The use of the "One-Minute Churn" assures to private families fresh, pure and wholesome butter at all seasons of the year, doing away with tainted and poorly manufactured butter.

EXPORT ONLY.—Upon receipt of Thirty Dollars (\$30.00) in U. S. Gold, or its equivalent, we will box, ready for shipment abroad, one of each, seven in all, of our "One-Minute Churns" as follows:

Size A.	Industrial Miniature, capacity 1 quart
Size No. 1	(Special Household Size) " 1 gallon
Size No. 2	" " " 2 " "
Size No. 3	" " " 3 " "
Size No. 4	" " " 4 " "
Size No. 5	" " " 5 " "
Size No. 6	" " " 6 " "

NOTE.—Size A is an Industrial Toy for Children. Orders received direct or through export commission houses. Specify "One-Minute Churns."

THE ONE-MINUTE CHURN CO.
No. 9 Old Slip, New York, U. S. A.

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Paul Kitchen Cabinet No. 50.

Just the Thing for the Kitchen.

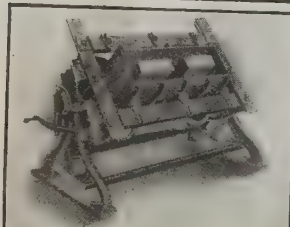
PAUL KITCHEN CABINET No. 50

has hardwood frame and legs, oak finish, whitewood top, 26x47 inches; height, 29 inches; has 2 sliding flour bins, with 2-ply veneer bottoms, one partitioned for cornmeal, graham flour, sugar or salt; 2 drawers; 1 bread and 1 meat board.

Write for catalogue and discount.

Delivered k. d., f. o. b. New York, Boston or Baltimore. Each cabinet weighs 90 lbs. Packed 2 to crate. Size, 4 ft. x 3 ft. x 2 1/2 ft., or 30 cu. ft.; this is for 2 cabinets packed together. 2 cabinets weigh, packed, 210 lbs.

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Machine showing rocked position.

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COLUMBUS, OHIO, U. S. A.,
MANUFACTURERS OF

The Winget Concrete Building Block Machine,

Automatic, adjustable and rocking. To admit the facing of blocks. Combining ten machines in one, for the manufacture of concrete blocks for dwellings, factories, bridges, power plants, docks, retaining walls, tunnels, subways, silos, foundations, gutter blocks, wall copings, etc., etc.

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with Malleable Iron Hubs are mechanically correct in design and construction. No slippage on the shaft. No wide paddle-like arms to fan the air and consume power. Be progressive and use a modern pulley.

A half million already in daily use. Live machinery and supply dealers everywhere handle and carry them in stock. Catalog on request.

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A complete line of Accessories for Cotton Machinery, Etc., always on hand.



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Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-Inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., \$40.00.

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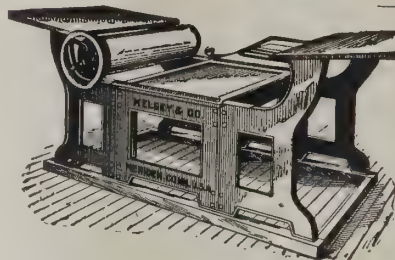


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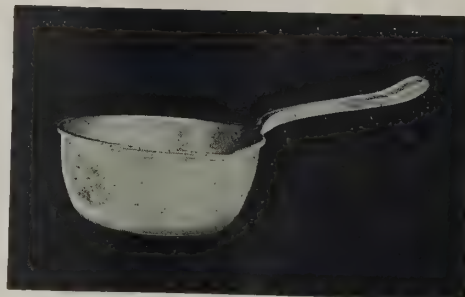
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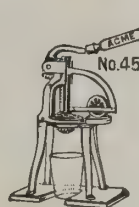
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25. Quick and Easy.
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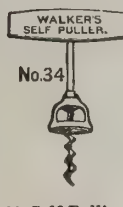
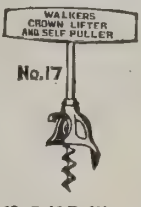
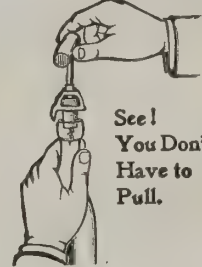
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SELF PULLER.
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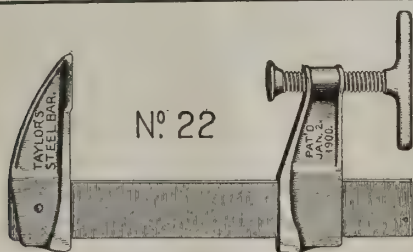
Axle Washers for All Foreign and Domestic Axles.

All Kinds of Plumbers' and Special Washers.

Orders Filled Through Commission Houses.

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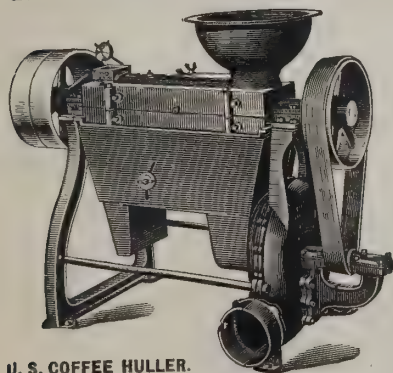
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*New England* **Watches**have a world-wide reputation and are made to suit
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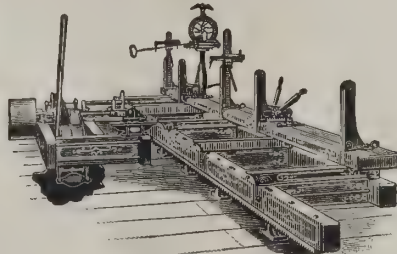
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N. B.—The steel used exclusively in these
Clamps is of a special high grade, testing
more than double the strength of Bessemer
steel for clamping purposes.**JAMES L. TAYLOR**

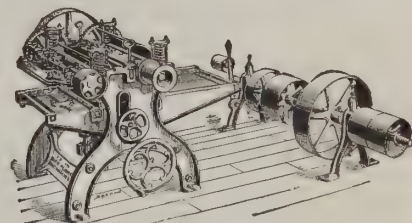
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We build a complete line of Machinery for Handling the Coffee Crop, also Large and Small Saw Mills to suit all conditions,
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P. AUBECK, Mgr.**SALEM IRON WORKS,** Department
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20-INCH DIXIE PLANER AND MATCHER.

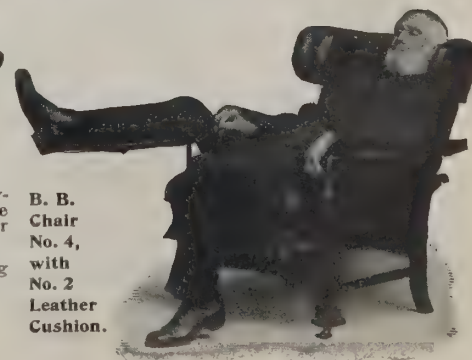
For dressing and tonguing and grooving lumber,
such as siding, flooring, ceiling, etc.**Winston-Salem, N. C., U. S. A.****The B. B. Reclining Chair,**

In which to Read, Rest, Sleep, Write, Study, Sew or Smoke.

Adaptable to Your Different Inclinations of Mind or Body.

The Chair here shown is that known as our B. B. No. 4.
It is made in weathered oak finish and is leather covered.Upon receipt of **twenty-five dollars and fifty cents** in U. S. gold, or its equivalent, we will crate ready for steamer and deliver f. o. b. cars at New York City, **One No. 4 B. B. Adjustable Chair**, made from quartered-sawed oak, finished in either Golden, Weathered or Flemish.

Orders received direct or through export houses. Our illustrated catalogue, showing the various styles of chairs made by us, mailed postpaid.

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Box 605, RACINE, WISCONSIN, U. S. A.**B. B.
Chair
No. 4,
with
No. 2
Leather
Cushion.

TROWBRIDGE CHOCOLATE CHIP CO.

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ORIGINAL CHOCOLATE CHIPS.



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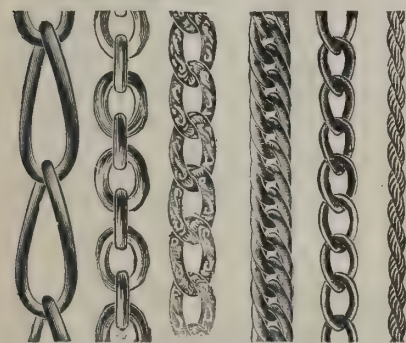


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Manufacturers of

RICH CUT GLASS

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HENRY WILLIAMS & SON,

PROVIDENCE, R. I., U. S. A.

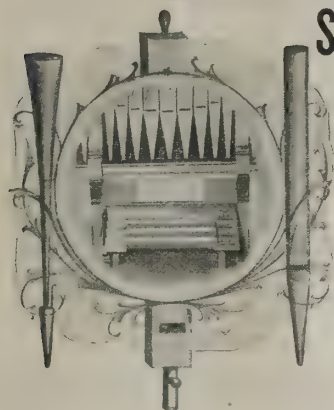
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Fine Rolled-Plate and Seamless Wire Chains, Neck Chains, Bracelets and Lorgnette Chains.

Orders filled through commission houses. Correspondence solicited

No. 19	\$ 8.50 a doz. net., f. o. b. New York
No. 578	9.00
No. 494	11.00
No. 3 1/4	7.50
No. 260	7.00
No. 235	15.00

Fine rolled plate, warranted 6 years.



Samuel Pierce Organ Pipe Co.

Manufacturers and Exporters of

Metal and Wood Organ Pipes

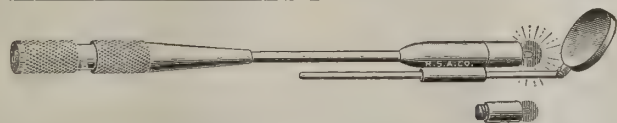
AND ORGAN MATERIALS.

SPECIALTIES: Decorating Front, Pipes, Voicing Flue and Reed Pipes.

The Oldest Organ Pipe Manufacturers in the United States.

Correspondence solicited. Catalogue "D" on application.

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No Physician's Office Equipment Is Complete Without Some of Our

Diagnostic Instruments,

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Send for Catalogue A.

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RUBBER TYPE

Is as useful as your typewriter in your office. It is made so that you can put it into a holder and use it immediately as a rubber stamp. You can set three or four lines if you wish. For business men we have a special set with five capital letters and six small letters of the ones used most, and the rest in proportion. Price, \$2.00, postpaid. We also manufacture Rubber Stamp Machines, Printing Presses, Steel Stamps, Seals, Stencils and Rubber Stamps.

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Cable Address: "Computico, N. Y."

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Discounts on Application Made for the Moneys of All Nations.

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Shipping weight, net, 98 lbs. (44 kil.); gross, 115 lbs. (68 kil.); 6.1 cu. ft. (172 cu. met.). Order direct or through any reliable exporter.



The "RELIANCE" Price, \$5.

Automatic Numbering Machine

Discount, 30 Per Cent in Lots of 1 Doz.
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This machine is **automatic** throughout. It can be set to print numbers consecutively—print a series in duplicate—or repeat any number indefinitely.

No rubber used in the construction, and every machine is sold with our guarantee. Style of imprint:—

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NEWBURGH, N. Y., U. S. A.

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Artistic Reed and Rattan Furniture

OF ALL KINDS.

Special offer for export. Send for photographs. Order through any reliable exporter, and send us duplicate of order by same mail, so we can trace and execute promptly.

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A SCIENTIFIC WONDER

200 HOURS' LIGHT FOR ONE CENT.

Makes and consumes its own gas, generated from kerosene oil.

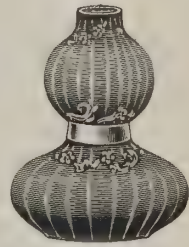
The only lamp using a glass burner.

Absolutely Safe and Free from Smoke or Odor.

Catalogue and Price List sent on application. Patented in the United States, Gt. Britain, France and Austria.



Style 1.



Style 2.

THE GLOW NIGHT LAMP CO., Incorp., 73-75 PEARL ST., Boston, Mass. U.S.A.

"FOR THOSE WHO WANT THE BEST."



Fiberlite Shade and Holder.

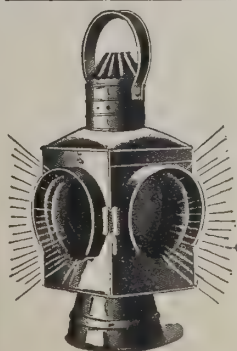
Shade made from fiber similar to that used for lining sockets. Mottled green on outside and pearl gray inside. Fiber finished under pressure which gives it a gloss finish, furnishing fine reflection for light. So tough that edges will not break and so springy that it cannot crush. Holder of heavy wire; one piece, clamps to socket with a catch. One catch and no screws. Fastens to inside of shade and any tendency to pull off only makes it hold more securely.

Light as aluminum shades, which means cheap freight rates.

TO INTRODUCE ABROAD:

Upon receipt of \$40.00 in U.S. gold or its equivalent, we will box and deliver f. o. b. cars at New York, five gross of these shades in assorted sizes.

APPLIED DEVICE COMPANY, Springfield, Mass., U. S. A.



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88-90 Union Street, Boston, Mass., U. S. A.

MANUFACTURERS OF

Railroad, Ship, Street and Square Lanterns.

Heavy Tinware for Railroads,
Oil Cans of every description.
Locomotive Gauge Lights.

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CINCINNATI, OHIO, U. S. A.

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PRINTERS' ROLLERS
For ANY climate, hot or cold, can be made at once by any printer. You can make the best rollers, as hard or as soft as you please. No roller can be better. "Rough and Ready" does not spoil from age. English and Spanish directions. Price, 35c. List per pound, 77c. List per kilo, f. o. b. New York. Being an unfinished composition, the rollers when made cost less than this. Send to us for pamphlet. Used since 1878. We are manufacturers who sell at first hand and invite correspondence from prominent foreign dealers, to whom we offer special inducements; or, if you prefer, order through Amsinck & Co., American Trading Co. or any other responsible New York exporter.

Printers' Roller Composition.

"They Sound Different"
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STEEL and WOUND
Musical Strings.

For Violin, Guitar, Mandolin, Banjo, Harps, Etc.
Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.
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New Brunswick, N. J., U. S. A.

A. W. BRIM
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Lead Composition and Brass
Pattern Letters and Figures
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656-660 JEFFERSON AVENUE, TOLEDO, OHIO, U. S. A.
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\$4.30 up.

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GRINDING MACHINES. EMERY WHEELS. EMERY.
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Reliable Incubators
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And we are the only Makers.
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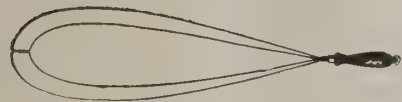
Make all water, no matter how dirty, absolutely pure. Prevent typhoid and all zymotic diseases. Are small, compact, simple and inexpensive. All sizes and prices from \$2.50 up. For full particulars, terms, discounts, etc., write to

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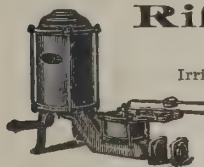
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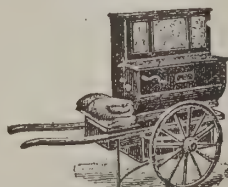
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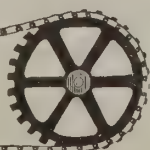
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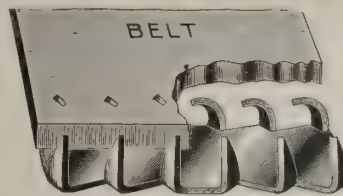


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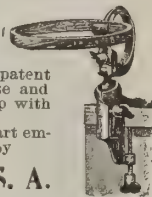
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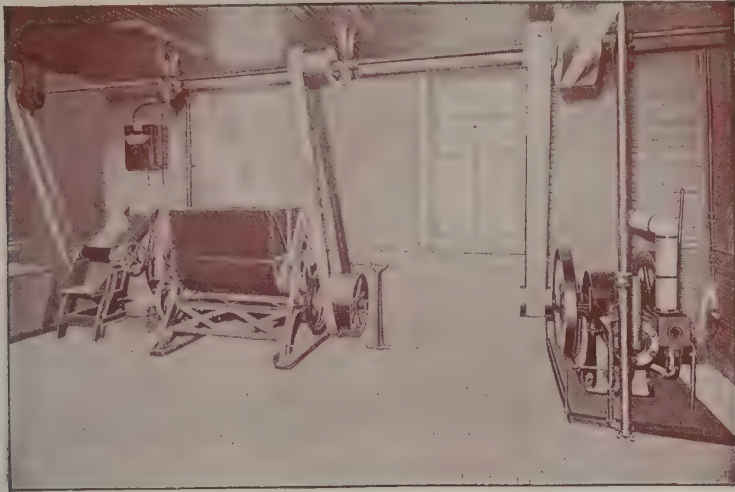
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Popularity ^{WON} ON Merit.

This explains the demand for our Baker's Machinery in foreign countries.

IMITATED, BUT NOT EQUALED.

First-class in material and workmanship—just as represented.

OUR GUARANTEE GOES WITH EVERY ORDER.

We make Cake Machines, Cracker Machines, Dough Mixers, Brakes, Etc. Send for our new catalogue.

The J. W. Ruger Mfg. Co., **BUFFALO, NEW YORK, U. S. A.**



PELTON WATER WHEELS

PIKES PEAK POWER CO.

The illustration herein shown is that of Pikes Peak Power Co.'s Hydro-Electric Transmission Plant, located near Victor, Colorado. It consists of three 1,000-horsepower Pelton Wheels, operating under 1,180-foot head and direct-connected to electric generator.

This electric power is supplied to the many mines, mills and other industries in that vicinity. This plant has been running day and night for four years at practically no expense for repairs. Send for catalog illustrating many other plants of similar character.

PELTON WATER WHEEL CO.

150 Liberty Street, New York.

128 Main Street, San Francisco.

PAINTING BY MACHINERY.

THE SPRAY PAINTER.

FOR APPLYING ANY KIND OF PAINT OR WHITEWASH.

Over 30,000 of Our Painting Machines in Actual Use. More than all other styles combined.

Read the following from one of the largest painting contracting firms in the United States:

St. Louis, Mo., January 30, 1904.
THE HOOK-HARDIE COMPANY, Hudson, Mich.:

Gentlemen—In reply to your letter of the 25th inst., our contracts on the buildings of the Louisiana Purchase Exposition amount to something over 12,000,000 square feet, all of which is practically completed at this writing, and at least 95 per cent. of this work was done with the machines we bought from you. We examined all of the machines on the market and tested quite a few, finally deciding on your machine and one made by another firm. Shortly after starting work we dropped the other machine entirely on account of the large amount of time lost by the machine getting out of order. We also ran two lines of hose from your machine without increasing the number of men on the pump, something we could not do with any of the other machines, thus increasing the efficiency of both machine and men employed 100 per cent.

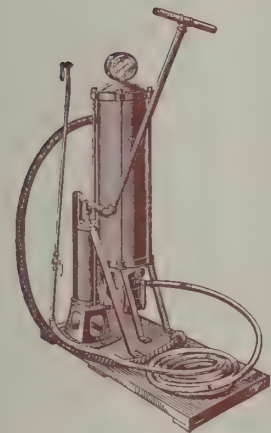
We take pleasure in stating that, in our estimation, your machine is far superior to anything on the market.

The cold-water paint used amounted to almost 400,000 pounds.

Respectfully yours, BUILDERS' CONTRACTING COMPANY.

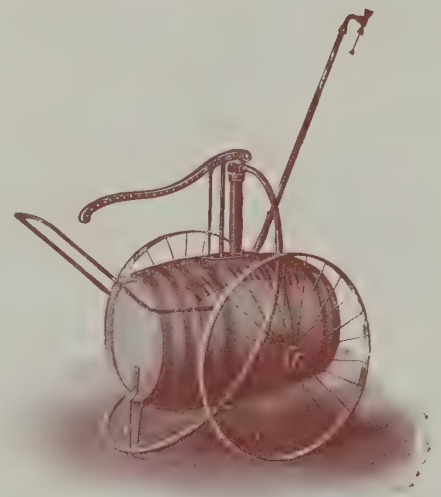
SPECIAL OFFERS FOR EXPORT:

Hook's "Best" Pneumatic Painting Machine (twenty-five of which were used in painting the buildings of the Louisiana Purchase Exposition), equipped with 25 feet pneumatic hose, 8-foot extension rod, for reaching ceilings and overhead work, and two nozzles. Gross weight, 250 pounds. Net weight, 125 pounds. Size of box, 20½x19½x47 inches. Price, each, \$25.00.



Hook's "Best" Pneumatic Painting Machine.

Hardie's No. 7 Painting Machine comprises a patented brass pump with brass ball valves, ingenious agitator and paint mixer, contained in a 30-gallon barrel, mounted on wrought-iron wheels, 26 inches in diameter, with 1½-inch tires, and is as easy to wheel as a baby carriage. It is equipped with 10 feet of high-grade ½-inch hose, long extension rod and special disgoring painting nozzle. Will spray any liquid of a sprayable nature. Weight, 110 pounds. Packed in two cases—one 9 cubic feet, one 7 cubic feet. Price, each, \$17.50.



Hardie's No. 7 Painting Machine.

The prices above quoted (U. S. Gold) include packing and delivery at New York City.

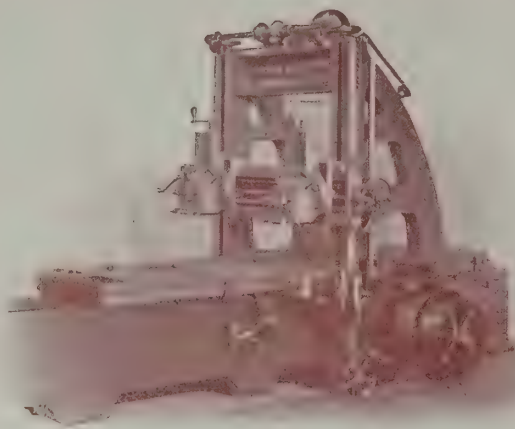
THE "STAY-THERE" READY-MIXED COLD-WATER PAINT

is composed of minerals ground in a liquid chemical, to be thinned with water. Packed in tight, iron-hooped barrels. It is as durable as oil paint; is fireproof, weatherproof, washable and sanitary.

SPECIAL OFFER FOR EXPORT.

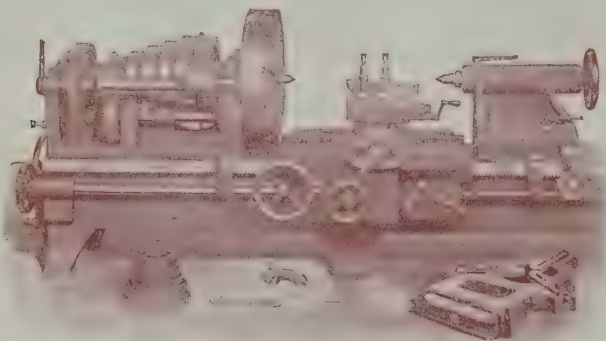
Interior Paint (white), per ton of 2,000 pounds net, - - \$30.00 Exterior Paint (white), per ton of 2,000 pounds net, - \$50.00
Packed in barrels weighing about 400 pounds, measuring 28 x 28 x 20½ inches. These prices are F. O. B. dock at New York City.

THE HOOK-HARDIE CO., **MANUFACTURERS,** **Hudson, Mich., U. S. A.**
Cable Address, "Besthook," W. U. Code.



60-inch Pond Planer.

Pond Planers are built in twenty-one sizes, taking from 26 to 170 inches square between housings; for planing any length.



32-inch Pond Triple-Geared Lathe.

Pond Lathes are built in twenty-four sizes, from 22 to 84 inches swing over the ways; turning any reasonable length.

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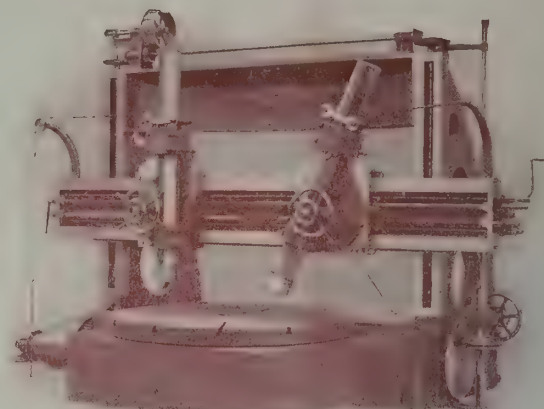
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Complete Equipments

FOR

Machine Shops, Railway Shops
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Send for Illustrated Catalogue,
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**10-foot Niles Boring and Turning
Mill.**

Niles Boring and Turning Mills are built in twenty-five sizes, from 30-inch to 30-foot swing.

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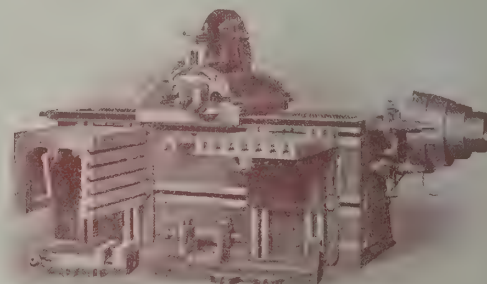
136-138 Liberty Street,
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London Office: 23-25 Victoria Street.

CABLE ADDRESSES:

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26-inch Bement Shaper.

Bement Traveling Head Shaping Machines are built with one or two heads, in four sizes, from 12 to 26 inch stroke.

LANE MANUFACTURING CO.,

Montpelier, Vermont,
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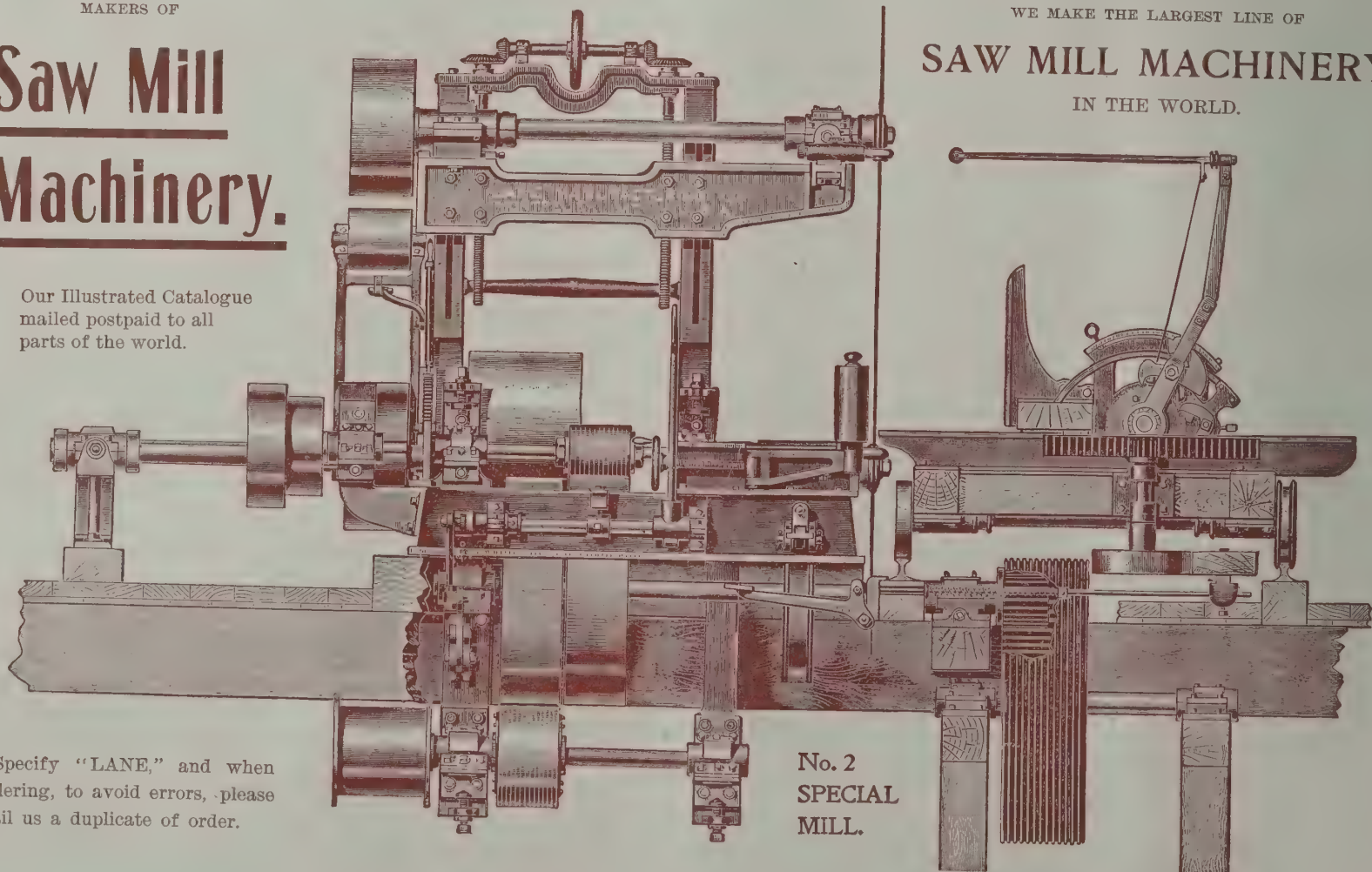
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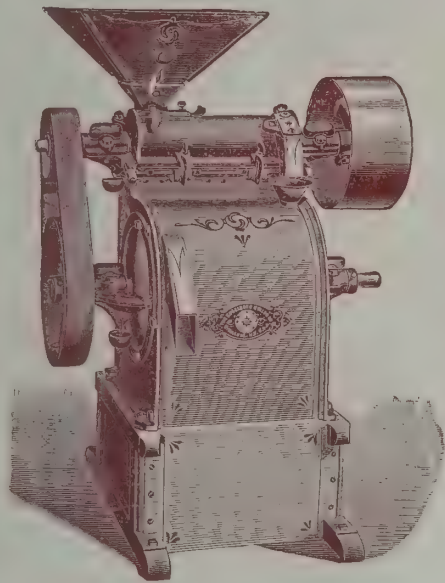
WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIV.

NEW YORK, AUGUST, 1904.

No. 3.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

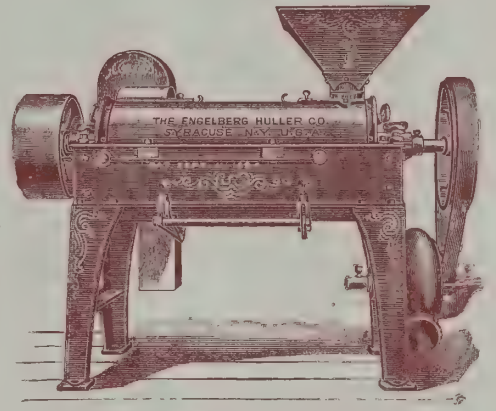


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

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Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the Only machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.



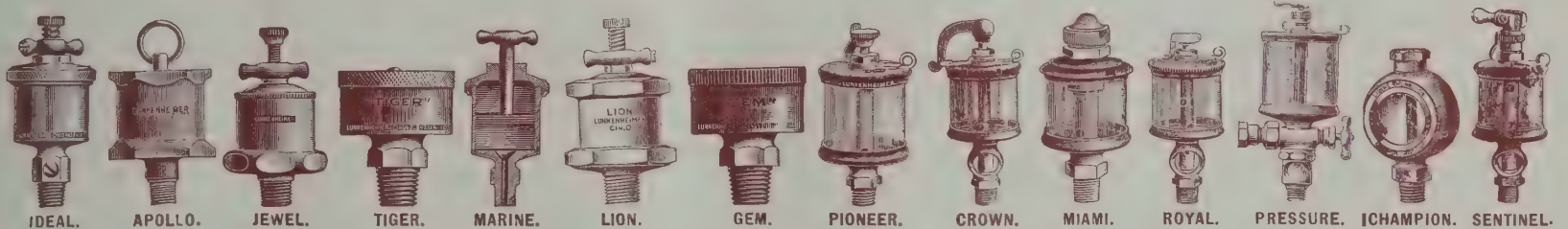
Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

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Use Grease or Oil and Lunkenheimer Cups

and you will have bearings lubricated to your entire satisfaction. Endorsed by millions of satisfied users all over the world. Write for Catalog of Brass and Iron Steam Specialties and Engineering Appliances of superior quality. All goods rigidly inspected and tested before shipment. Specify "Lunkenheimer" make and order from any leading export house.



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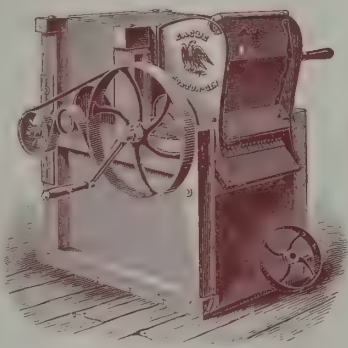
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Cincinnati, O., U. S. A.

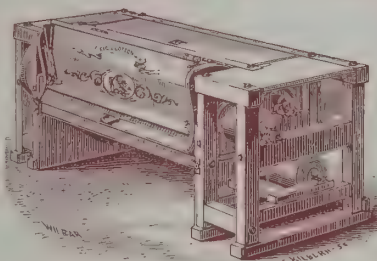
EAGLE COTTON GINS.

These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

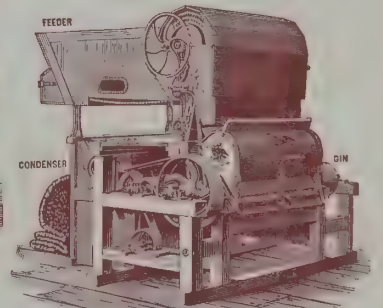
For further details illustrated Catalogues will be furnished on application.



Hand Gin.



Power Gin with 12-inch Saws



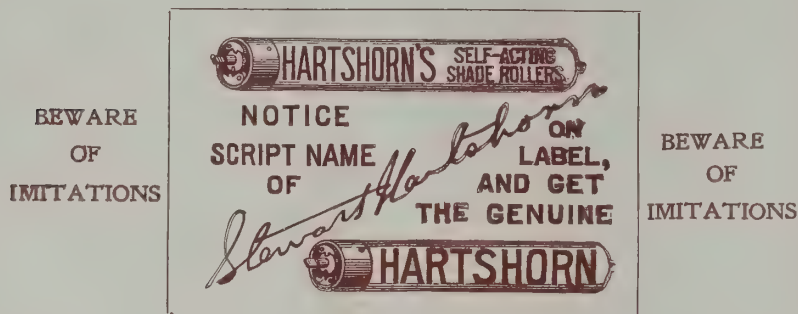
Power Gin with 10-inch Saws, with Feeder and Condenser.

CONTINENTAL GIN CO., Inc., Successors to EAGLE COTTON GIN CO.,
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A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

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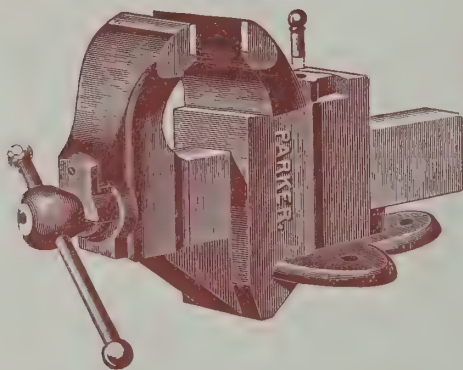
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THE Parker Vise

Unequaled for Strength, Durability and Finish.

Has stood the test of over 50 YEARS.

EVERY VISE MADE FOR SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP USED IN THE MANUFACTURE OF THESE GOODS.

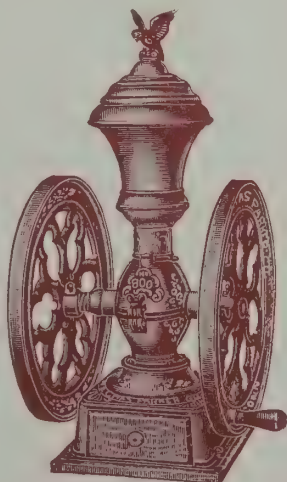
Have been in use for over 60 YEARS and will stand comparison with any Mill in the market.

We manufacture a line of
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Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

Enquiries concerning our line will have prompt attention. Catalogues on application.

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CHAS. PARKER CO.,
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DIETZ Nos. 1 and 2 COLD-BLAST LANTERN BLIZZARD.

These Lanterns are the culmination of a vast deal of experiment, and are offered as something *extra good* in the Lantern line. We call them "Cold Blast," for the reason that they are fed exclusively with cold air, that which comes from above, being taken in through openings between the two rings at the top.

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Price, No. 1, \$13.50 per doz.
No. 2, 16.00 "

We are pleased to send complete catalogues (Spanish and English) and price-list of our complete line of Lamps and Lanterns to those interested.

**R. E. DIETZ
COMPANY,**

NEW YORK, U. S. A.

DIETZ



COLD BLAST (BLIZZARD) LANTERN

Established 1840.

ARCADE MANUFACTURING CO.

(Incorporated 1885),

Manufacturers of

"PERFECT" Lemon Squeezers,

CORK PULLERS

and "Crystal," "Imperial," "Jewel,"
"X Ray," "Royal Pound," "Telephone,"
"New Home" and "Favorite"

COFFEE MILLS.



"Perfect" Lemon Squeezer No. 20.

No. 20. Designed especially for family use. Mounted on wood and can be moved around as desired. The frame is highly polished and nickel-plated. The parts coming in contact with the lemon are made of malleable iron, heavily coated with tin and will not corrode. Sample dozen, boxed ready for steamer, f. o. b. New York, \$12.00. Size of box: 13x17x21 in. Weight: gross, 50 lbs; net, 36 lbs.

No. 1. Neat looking; reliable. Designed for bars, restaurants or wherever a stationary lemon squeezer can be used. Can be readily detached from bracket or holder for cleaning purposes by simply lifting it out of the socket. Constructed of the same material as No. 20. Sample Dozen, boxed ready for steamer, f. o. b. New York, \$12.00. Size of box: 11½x13½x23¾ in. Weight: gross, 70 lbs.; net, 55 lbs.

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YOU
WANT."

*Gets All of
the Juice and
Gets It Easy.*

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Squeezer No. 1.

GRAND RAPIDS DESK COMPANY,

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ESTABLISHED 1880.

ESTABLISHED 1880.



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OUR NEW ROLL-TOP DESK.
No. 516.

PRICE, \$170.00



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Our New Line of Desks, for All Uses, Recently Placed Upon the Market, Embody the Results of Over 23 Years' Practical Experience in Actual Manufacturing.

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THE IMPROVED United States Cream Separator

WAS AWARDED

GOLD MEDAL (The Highest Award) at the Pan-American, Buffalo, N.Y., U. S. A.

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U. S. Separator, Dairy Size.
High Frame.

And the official records show that in the Model Dairy at the Pan-American Its Work Excelled Everything, averaging .0138 for 50 consecutive runs, and won World's Record for practical every-day work.

The United States Separator stands without a peer, the most thorough Separator made.

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GRAND RAPIDS, MICH., U. S. A.

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High-Grade Refrigerators FOR EXPORT.

"The Great Sanitary Refrigerators."

YUKON REFRIGERATOR

No. 313



YUKON REFRIGERATOR No. 313.

Is made of solid ash. Has **GENUINE GRANITE ROCK WOOL INSULATION**, which is the most perfect non-conductor of heat or cold known to science.

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For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

For polishing patent leather shoes quickly and without injury to the leather.



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Such is the verdict of thousands of users throughout the "States" of the



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WASHES LILY WHITE.

White Lily Washer.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is $2\frac{3}{4}$ turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

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Weight, 600 lbs. Measurements: 18x24x24 inches.

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Export Department: 54 Warren Street, New York.

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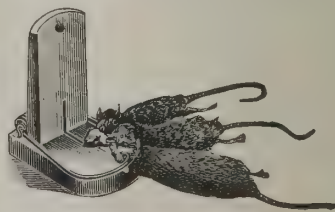
We make a full line of
CLOTHES WRINGERS
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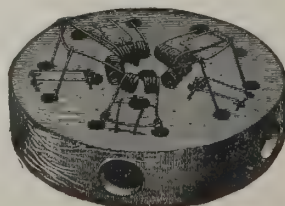


Rex Trap.
Made in two sizes:
large size for rats;
small size for mice.



Erie Rat Trap.
Best Trap on Earth.

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MOUSE TRAPS.—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker,"
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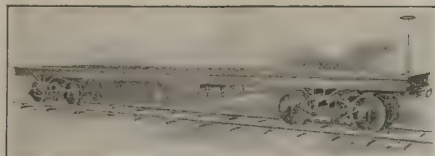
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in English only
and of Rat
and Mouse
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English and
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Lovell's Easy-Setting Metallic Mouse Trap.

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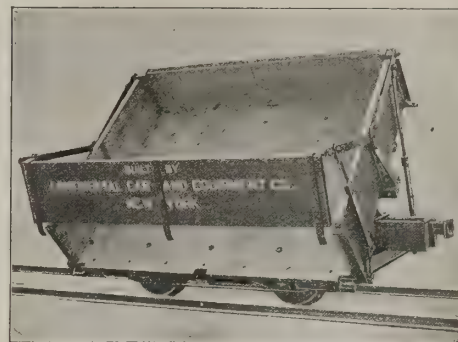
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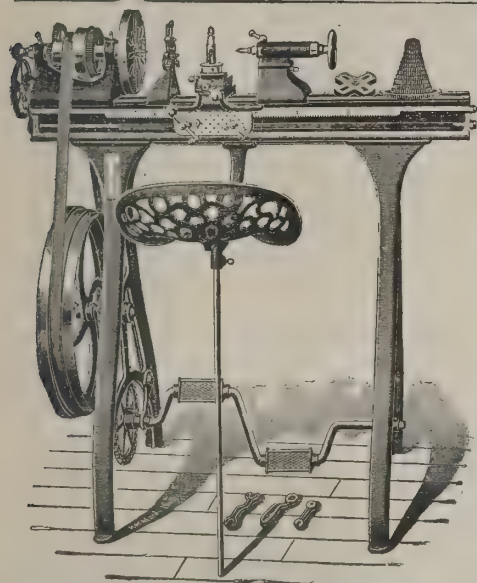
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FOR FOREIGN MARKETS.—Our Cars are taken apart and packed for shipment according to the best known methods.

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This cut shows our modern Dumping Car. It dumps on both sides of the track and is built strongly for hauling and dumping dirt, rock, sand, clay, ore, etc. Built in all capacities from 1 to 5 cubic metres.



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FOR WOOD AND METAL WORK.

SCROLL SAWS, CIRCULAR SAWS, LATHES, MORTISERS, TENONERS, GRINDING MACHINES, DRILLING MACHINES, ETC.

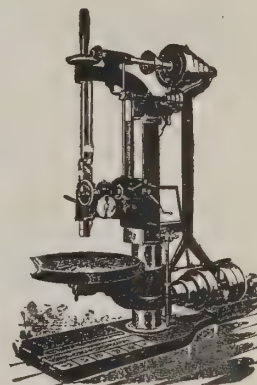
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Sole Manufacturers,

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MONROE PORCELAIN REFRIGERATORS.

THE MONROE IS A HIGH-GRADE REFRIGERATOR, BUILT FOR THE HOUSEHOLD.

Each food compartment is moulded in one solid piece of porcelain. The corners are rounded. There are no joints or crevices for the food to decay in. The porcelain is white, durable, and as easily cleaned as a china dish. The ideal house refrigerator, absolutely sanitary. The prices here quoted for foreign markets only (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

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Oak Exterior,

Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.

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Oak Exterior,

Crated, measures 49 x 27 x 57 inches. Gross weight, 820 lbs.

All sizes carried in stock ready for immediate shipment.
Special sizes built to order.

Our latest catalogue, illustrating and describing the various styles of Solid Porcelain Refrigerators made by us, mailed postpaid.

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Monroe Refrigerator No. 21. Style D.

Specify "MONROE."

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MONROE REFRIGERATOR CO.,

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GRAND RAPIDS FIXTURES CO., MANUFACTURERS OF K.-D. (KNOCK-DOWN) SHOW CASES FOR EXPORT.

SHOW CASE No. 31 is Our Leader for Foreign Markets, and is just the thing for displaying Furnishing Goods, Chemists' Sundries, Dry Goods; in fact, is well adapted for the display of any line of goods.

SHOW CASE No. 31, "set up" (ready for use), is 8 feet long, 42 inches high, and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength. A sheet glass in front, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with two wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

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Upon receipt of \$42.00 in U. S. Gold (or its equivalent), we will box, ready for transportation abroad, and deliver F. O. B. New York City, one of our No. 31 Show Cases as shown. Net weight, 248 pounds; gross weight, 384 pounds. K.-D. for export measures 28 cubic feet.

Our Catalogue, illustrating and describing the various styles and sizes of K.-D. Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.



Grand Rapids Fixtures Co.'s Show Case No. 31

GRAND RAPIDS FIXTURES CO., GRAND RAPIDS, MICH., U. S. A.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."



GUARANTEE WASHER.

THE Guarantee

FOUR-STROKE ROTARY

Washing Machine

Just placed upon the foreign and home markets, combines the Latest Improvements in High-Speed, Ball-Bearing Washing Machines and will accomplish all that is claimed for or required of any washing machine, and more.

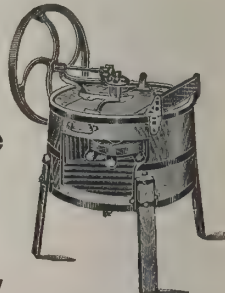
NOT A SPECULATION, BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.

FOR TWENTY DOLLARS

in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, Four (4) Guarantee Four-Stroke Rotary Washing Machines. (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds. Order FOUR NOW. Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States. NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.



GUARANTEE WASHER.



ONCE SOLD, THEY NEVER COME BACK.

OCEAN WAVE WASHERS

Wash the clothes as easily and cleanly as sea waves wash the beach.

OVER 100,000 NOW IN USE.

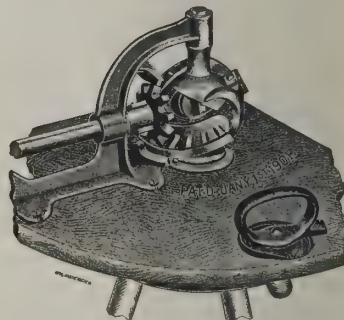
Shipping weight, 85 lbs.

Size, 2 x 2 x 3—12 cubic feet.

SPECIAL FEATURES.

Our Gearing: Simple in construction; impossible to throw out of gear; the longer it is used the easier it will run. Our Fly Wheel has no threads to strip; no nuts to lose, being attached or detached in a moment's time. Our Improved Dasher is hand-turned; clothes do not cling to it and tear. We assure free action of dasher by using heavy galvanized flanged ring in dasher block, thereby relieving all friction. In general construction of tub and finish, only best materials are used. We ship through any responsible New York exporter. All orders must be sent to us direct.

VOSS BROS. MFG. CO.,
DAVENPORT, IOWA, U. S. A.

THERE IS NO FRICTION.
NO LOST MOTION.

THE GENUINE

"O-K" WASHER.

KNOWN AND IN USE THROUGHOUT THE CIVILIZED WORLD.

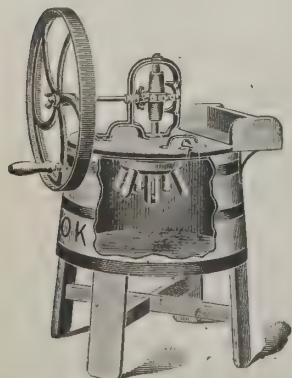
The O. K. is the KING of ROTARY WASHING MACHINES! Because:

1. The O. K. is the only Rotary Washer that has Revolving Steel Ball Gearing, reducing the friction and thus making the machine so light running and almost noiseless.
2. The tub is made of Louisiana Red Cypress lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside of the tub, as are all of the castings.
3. The wheel turns right or left, pin-wheel or dasher reverses automatically, turning the clothes back and forth through the hot soap-suds, and cleaning them without rubbing them to pieces.
4. The O. K. Washer is made by experienced mechanics, and will outlast any other washer on the market.
5. The tub has a wringer box, fastened with steel brackets.
6. The lid on tub closes tight, no escape of steam.
7. Has gilded hoops, castings and name.

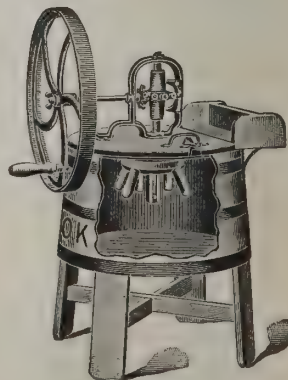
Prices quoted F. O. B. New York. Each O. K. Washing Machine, crated, ready for transportation abroad, weighs about ninety (90) pounds, and occupies nine (9) cubic feet.

Manufactured Exclusively by

H. F. BRAMMER MFG. CO.,
DAVENPORT, IOWA, U. S. A.



O. K. WASHER.



O. K. WASHER.

THOMAS K. OBER & CO. (INC.)

832 DREXEL

BUILDING,

Sole Export Agents of the Kitson Hydro-Carbon Heating and Incandescent Lighting Co.

PHILADELPHIA,

PA., U.S.A.

What helps to sell goods?
What advertises your place of business?
WHAT BRINGS TRADE?
What makes the home more inviting?

LIGHT.

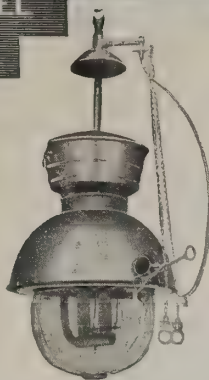
Use Keros Incandescent Oil Lamps

in your shop and they will pay for themselves in a month in increased trade. Most economical light in the world. Burns 90 per cent. of air to 10 per cent. of vaporized oil.

One Gallon of Kerosene Oil Gives a 1,000-Candle-Power Light for Twenty-five Hours.
Perfectly Safe. Does Not Increase the Insurance.

Send for Illustrated Catalogue and Price-List, giving full information.
See June number of this Journal for illustrations of various styles.

No. 190x.
Outside Lamp;
outfit with
tank;
2,000 candle-
power;
30 inches.



No. 501.

Bracket Lamp; outfit with
tank; 1,000 candle-power
15 inches.

BALKE MANUFACTURING CO.,

Patentees and Manufacturers of

Balke Combination Davenport, Billiard and Pool Tables,
and Standard Tables.

INCORPORATED \$100,000.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note—The prices here quoted, U. S. Gold or its equivalent, are for Foreign Markets Only, and include boxing ready for steamer, delivered f. o. b. cars at New York City.

Style "C," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

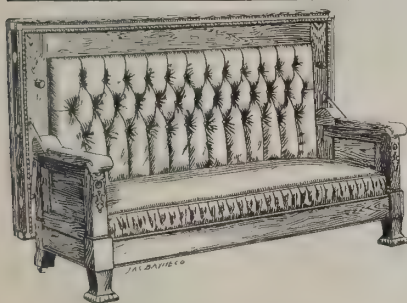
Style "C," converted into a Billiard or Pool Table, has a playing surface of 3½x7 feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, \$95.00. Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: 4'x8'x6'; 32'x86'x6'.

Standard Billiard Tables.

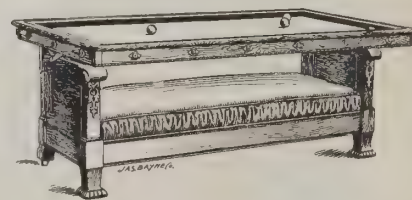
"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate; imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4x8 feet. Price complete, \$125.00. Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: 4'2"x8'2"x8'; 4'x8'2"x2'.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, 3½x7 feet. Price complete, \$90.00. Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: 4'x8'x8'; 3'6"x6'x2'.

Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order.



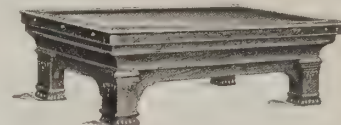
Style "C," as a Davenport.



Style "C," converted into a Billiard Table.



"Benedict" Special Billiard Table.

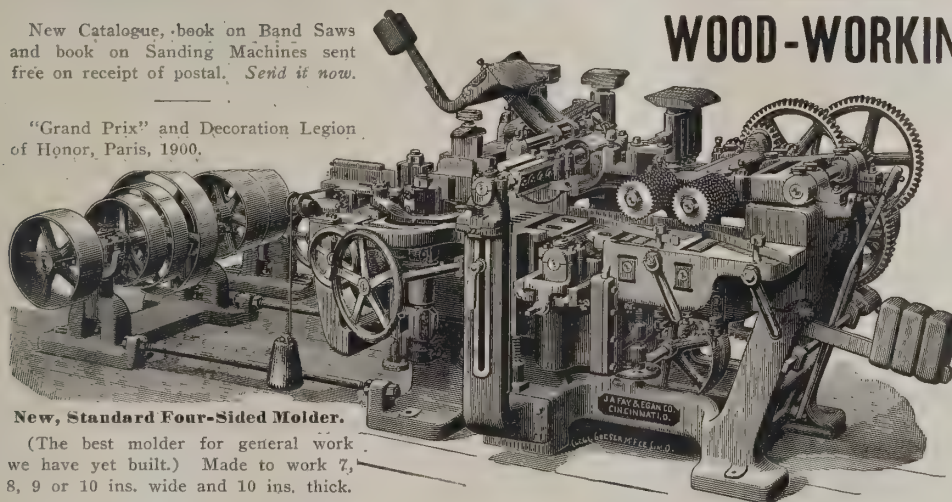


"Den" Special Billiard Table.

BALKE MANUFACTURING CO., Grand Rapids, Mich., U. S. A.

New Catalogue, book on Band Saws
and book on Sanding Machines sent
free on receipt of postal. Send it now.

"Grand Prix" and Decoration Legion
of Honor, Paris, 1900.



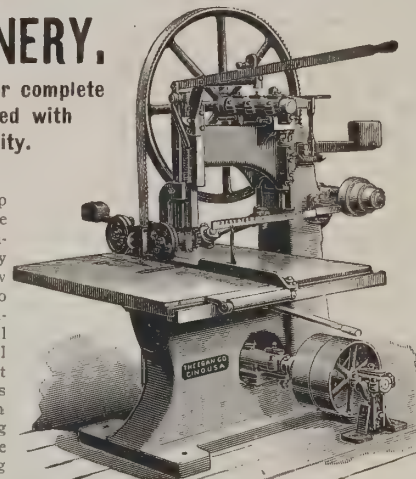
New, Standard Four-Sided Molder.

(The best molder for general work
we have yet built.) Made to work 7,
8, 9 or 10 ins. wide and 10 ins. thick.

WOOD-WORKING MACHINERY.

Single Machines or complete
outfits furnished with
equal facility.

Points on this Rip
Saw: Straining device
maintaining even ten-
sion on saw; very
small amount of saw
kerf; no wear, no
vibration; true align-
ment; very powerful
feed; lower wheel
solid, insuring fast
feed; can be used as
hand rip saw; can
be fitted with long
table on which are
rolls for returning
work.



New Automatic Band Rip Saw.

(Pat. Feb. 27, Oct. 2, 1900.)

Rips 24 inches wide; will rip quickly and
accurately hard or soft wood to 10 inches thick
without striking operator.

J. A. FAY & EGAN CO., 164-184 W. FRONT ST., Cincinnati, Ohio, U. S. A.

NASHUA TILL CO. NASHUA, N. H. U. S. A.

ESTABLISHED 1859

The drawer is made with
Oak or Black Walnut Front,
varnished and polished.

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ing coin cup of hard wood, finished
in oil. The apartments made to ac-
commodate the currency and coin of
the country in which they are to be
used. Size, 17x18 inches.

The Lock has
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which can be changed
instantly, and CAN NOT
be discovered by the
feeling of the finger
keys. This lock is safe,
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The Alarm does not
sound except when an
attempt is made to open
the drawer by an un-
authorized person.
This drawer is the orig-
inal automatic alarm
cash till of America and
is now in universal use
by merchants in U. S. A.



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These Engines Always Give
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Wheels (22 to 28 inch face)
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Special Wheels
for Freighting.

Boilers are of ample size.
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severest stress will blow off.

Engines on "belt-brake"
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[Founded by Root & Tinker, 1877].

WITH WHICH IS INCORPORATED

THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by Howard Lockwood & Co., 1877.]

THE JOHN C. COCHRAN COMPANY, - - - Publishers
Bennett Building, New York.

EDWARD W. DREW, - - - Editor.

Published on the 1st of each month.

Subscription, to any part of the world, \$2.00, or an equivalent sum in any other currency. Single copies, 20 cents each. Advertising rates on application.

Entered at the New York Post Office as Second-class Matter.

"AMERICA."

WHILE Shakespeare may have been technically justified in making disparaging remarks as to the importance of a name, yet there are many in commercial circles who unhesitatingly assert that *everything* depends upon the name.

So it is that while some may be disposed to cavil at the decision of the State Department to substitute the term "America," or "American" for "United States" in official correspondence with diplomatic, consular and commercial agencies of the Government men of business will be quick to realize that the course taken by Secretary Hay is a step in the line of directness and simplicity. For more than one hundred years the United States has been known to the outside world as America and its people as Americans.

It may be objected that Canada, Mexico and Brazil are just as much entitled to call their countries "America" and their citizens "Americans." So they are; but it is a fact that they are not so styled popularly and the probability is that they would object if they were.

An argument in favor of the change is that it will tend to avert confusion. Several other countries use "United States" as part of their titles, as Brazil, Mexico, and Colombia. No one would think of referring to either as America. On the contrary, no one would be misunderstood in referring to the United States as America.

Again, the term "America" includes the whole country from the Great Lakes and Maine to the Gulf, Territories as well as States, while "United States" takes in only the States received into the Union and for that reason can be criticized as an incomplete designation.

For many years, as a matter of convenience, the official residences of the diplomatic officials abroad have been described on the official mail as "the American Embassy," or "the American Legation," according to grade. Secretary Hay now has extended the same system to the consular officers in foreign countries and henceforth they will be officially, as they long have been actually, known as American.

SYSTEM IN AMERICA.

NOT a little of the success achieved by American manufacturers and merchants, both those engaged in foreign commerce and in home trade, is due to popular education in practical methods. System of operation in every branch of the factory and business office has long been a conspicuous part of the domestic economy of Americans. It has gone so far that a magazine, called *System*, has been established and has acquired a large circulation. The magazine is devoted entirely to recording the latest and most improved methods in securing systematic work in the various fields of business

effort. That such a publication has attracted so much attention shows the anxiousness of American employers to consider new methods of conducting their office affairs and their willingness to make improvements in any details of their business, wherever the same may be found advisable or necessary.

In another direction a similar movement toward successful incentive is offered by another American publication, *Popular Mechanics*, from which we sometimes quote articles that are of moment to our readers. This magazine treats in popular language of many matters of mechanical interest with which the less advanced laymen ought to be conversant. It gives them a better idea of what is going on in the world of mechanics than they could otherwise obtain. The accounts in the technical journals they would not thoroughly understand and the daily newspapers do not cover the field adequately. *Popular Mechanics* is an educator of distinct value to the American people and that it has a large circulation is due to the increasing interest on the part of Americans generally in the progress of the country.

American technical editors are becoming more advanced than ever before. Most of them are adopting the policy of writing their articles so that they are more understandable to the layman than was formerly the case. The journals pursuing this policy are reaping the harvest of larger circulation. We would like to mention some of these journals, but so many come to the office of THE AMERICAN EXPORTER that we fear such a list as we might print would possibly omit some exponent of the new idea and create the suspicion that a slight was intended.

AMERICAN WIRELESS WINS.

A VERY important step in promoting international commerce was taken last month by the United States Government when it closed a contract with an American wireless telegraph inventor under the terms of which the world will be at least half-girdled by the comparatively new method of communication. The system chosen is curiously enough one of which little has been heard abroad. Americans will take a patriotic pride in the choice, for the inventor has been a modest man and has not sought to exploit his ideas or intentions in advance of the realization of his plans. As will be learned by reading an article on the subject, published on another page, the contract means much for commerce. In fact, the contract is a guarantee of further progress.

Marconi and other wireless inventors are known throughout the world, while our American inventor, De Forest, has scarcely been heard of at all. The Marconi invention has been exploited to the four corners of the earth, but it is left for a bright but plodding American to put into actual and active being the first great wireless system of commercial utility. His achievement does not necessarily detract from the fame or credit which may be due Marconi. It is simply an instance showing where American genius has played more to practicability than to the galleries.

ADVERTISING is the life of the American export trade. It is a noteworthy fact that the most successful manufactured articles are the most liberally advertised. The export papers reach thousands of prospective customers at less comparative expense than is involved in the employment of a high-priced salesman who may meet one prospective customer—or perhaps two—while the papers go into the offices and homes of thousands.

AUSTRALIA continues to send in large orders for American appliances of various kinds, and letters from purchasers received by our manufacturers give gratifying evidence of appreciation of the latter's efforts to supply the best goods for the lowest reasonable price.

CUBA is becoming a larger purchaser of our sugar-making machinery. American manufacturers in this line excel in the quality and reasonable prices of the goods which they offer to persons requiring such articles.

SHIPPING COMBINE'S PROGRESS.

WHILE the report of the International Mercantile Marine Company for the year 1903, issued only last month, was expected to make a poor showing, the result was by no means so adverse as had been predicted. There was left a surplus for the year of nearly \$2,000,000. Promises are made by the managers that "greater cooperation on the part of the various lines and the elimination of unnecessary expenses" will materially increase the prosperity of the company. It is worth mentioning that the trust now controls 133 vessels, with a total capacity of 992,000 tons and that additional ships of 90,000 aggregate tonnage are under construction. The company operates no fewer than thirty-three distinct regular ocean routes.

President Ismay holds out hope to the shareholders that results will be better in the future, but he bases his expectation upon the promises which we have just quoted. We do not believe that these intentions alone, if carried out, will make any material or thoroughly satisfactory improvement in the financial results accruing from the combination. The shipping trust's managers must go further and look more carefully and effectively in the direction of providing better means of transportation for the commerce of the world.

If there is one thing more than the freight traffic of the world that needs improvement, we will have to be informed regarding it. The operation of the shipping trust was in the direction of cutting down expenses and attempting by cooperation to produce the same results. This the managers have not done; nor have they gained the expected financial profits by their economies. We would not want to say that there has been any fault of the management, but it is obvious to persons conversant with our foreign trade that there has not been shown the delicate balance of good judgment in effecting economies in operation without interfering with the extension, expansion and betterment of the service. In other words, the managers have apparently tried to earn dividends by cutting down service and expenses, without making any great effort to improve and increase the facilities for the interchange of commodities between the various countries affected by the company's operations.

To be brief, economy and contraction have guided the managers. In this era of progress that is the worst sort of policy, for there is a crying demand for better shipping facilities not only in America but in other countries. Take the Mediterranean field as an example: Transit between the ports of America and the ports on the Mediterranean Sea is so conspicuously bad that trade between the two regions is carried on under disadvantages which are certainly discouraging and are almost prohibitory to any but very enterprising and persistent people. This field alone would be worth cultivation by the shipping trust. There are many others that are capable of greater yield, both for the trust's vessels and for merchants engaged in international trade. We hope the managers of the International Mercantile Marine Company will take a new survey of the situation and turn over a new leaf on which may be printed: "Progress, better service and greater profits."

FAILURES are as inevitable as are successes in such a vast country as the United States. The percentage of failures in relation to the volume of successes is steadily diminishing and, compared with the enormous volume of business transacted, the failures are hardly worth noticing. In fact, they would receive no mention at this time if it were not for the fact that one of our commercial agencies recently sought to ascertain the cause of failures and the result in one respect at least may interest our foreign readers. It was found that eight-tenths of the bankrupts were of the class who do not advertise and had no other means of letting prospective purchasers know that they had goods to sell. Publicity produces trade.

AMERICAN steel rails seem to be in higher appreciation abroad, judging by the jump in exports from 7,345 tons in May to 21,291 tons in June. This showing needs no comment.

MEXICO seems unable to obtain enough American machinery of every sort and exporters dealing with that country are happy.

FACTORY VS. THE FARM.

A FEATURE of our export trade that has been overlooked is one of unusual interest from a variety of points of view. It was not until within the current calendar year that our manufacturers have been able to eclipse our agriculturalists in the value of the products that are going from both to foreign consumers who recognize the worth of our products. In going over the statistics of trade it has only just been discovered that it was in May of this year the factories first eclipsed the farms in value of exports. The total value of manufactures exported in 1904 was \$38,894,561, against \$37,891,838, the value of agricultural products exported. Ordinarily the value of agricultural exports is more than twice as great as that of manufactures exported.

There has been but one complete fiscal year in the history of our export trade in which the total exports of manufactures were even half as great as the total exports of agricultural products. In 1900 the value of manufactures exported was \$433,851,756 and of agricultural products \$835,858,123, so that in that particular year the value of manufactures exported was a little more than one-half that of agricultural products exported, but never before has the export of manufactures equaled or exceeded the value of the agricultural products in our figures of domestic exports.

The showing is a tribute to the splendid achievements of American manufacturers of agricultural and other kinds of machinery. In the agricultural line our own farmers have long had the advantage of the use of improved implements and in this way they have been enabled not only to supply the domestic demand for the products of the soil, but they have found it possible to create an extensive export trade. Farmers in other countries some years ago began to realize that our agricultural implements were not luxuries, but real necessities, and the result has been a great increase in the demand made upon American manufacturers. The exhibit for May possibly will not be maintained, for it is phenomenal, but it serves to call attention to the rapid growth of the exports of our manufactured articles.

The best proof of the worth of a pudding is in the eating. Our friends in foreign countries who have tried American implements or machines have continued to use them, being satisfied that the goods are the best that can be sold for the price.

CANADIAN implement houses are making a strong bid for the Australian trade. A correspondent in Sydney writes as follows to THE AMERICAN EXPORTER: "Your manufacturers have a decided advantage over all competitors in the harvesting machinery trade, but the British and Canadian manufacturers are persistent in their efforts to capture the trade. I do not see how they can succeed." Which news will be thoroughly appreciated by those whom it may affect, including those of our foreign readers who need, but have not yet obtained, any of the agricultural implements which are so well made in the United States.

RECENT statistics show that the United States is making great strides in shoe exports in the Western Hemisphere. Trade with the West Indies, British included, continues to gain and now amounts to about \$25,000 a month. Nor is this increase confined to the West Indies. It includes practically all of Latin America. Shipments to the Central American States and British Honduras have made the phenomenal gain of over 100 per cent. in a year, while Mexico has taken about 30 per cent. more and South America about 25 per cent. more. There has also been an increase of about 25 per cent. to British North America.

CANADA is branching out in the construction of steel ships. The plates now used are imported into Canada, duty free, from the United States, so that this country benefits by the maritime progress of our neighbor.

SOUTH AFRICA is taking very kindly to our mining machinery, judging by the increased shipments which have been reported recently.

THREE HUNDRED MILES AN HOUR BY RAIL?

IN THE AMERICAN EXPORTER of April, 1903, we printed an extended account of the invention of Professor Albertson, who expects to obtain a speed of 300 miles an hour for railway trains run over a system of his own construction, using an elevated rail with suspended cars and depending upon magnets to lighten the load-weight, thereby permitting greater speed with the motive power used. Most of our readers have probably forgotten all about the matter, but the subject was interesting and there are some who will remember the account which we printed of the wonderful miniature magnet train. In fact, we received some inquiries about it from readers abroad. To refresh the recollection of other readers it may be said briefly that Professor Albertson expects to obtain the high speed largely through magnetism, created by electricity, on an elevated right-of-way fully protected from obstruction. The American newspapers have from time to time mentioned the Professor's intention, but there has been no action until within the last month which made it necessary for us to again refer to his invention.

There is now under construction on Staten Island, a suburb of New York City, an experimental track two miles in length, upon which Professor Albertson expects to demonstrate the merits of his invention. The work of constructing the track has created fresh interest in magnetic trains and one of the New York papers one day last month reprinted almost word for word the article on the subject which appeared in THE AMERICAN EXPORTER more than a year ago. In connection with it there were, however, interviews with electrical engineers who doubted the practicability of the principle upon which Professor Albertson bases his chief claim for success. At the time we printed the matter for the information of our readers and without any indorsement. Now the electrical experts are disposed to go further, even before the tracks are finished or the cars are put in operation. They say that in trying to run at a 300-mile an hour speed the magnets are likely to drag the train and perhaps pull the structure itself to pieces, provided they work at all upon the Albertson principle. Edison, Westinghouse and other American inventors met with equally capable, experienced and scientific doubters who pronounced their inventions impracticable. The learned critics of Professor Albertson have not, so far as we know, raised the objection that the attainment of a 300-mile speed upon a track two miles long, with allowance for initiative action and for stopping, is something entirely out of the question. On a two-mile stretch of track it is doubtful if a higher speed than fifty miles an hour could be attained at the point where diminution of speed would have to be begun. It is regrettable that Professor Albertson has not found the ways and means for building a structure at least ten miles long. At 300 miles an hour it would take only two minutes to travel the ten miles, and it is doubtful if, allowing for gathering headway at the start and slowing down at the conclusion of the trip, there could be a test of the maximum speed claimed. The two-mile test might be satisfactory so far as it would go, but it would leave unanswered some of the chief objections raised by experts. The result of the experiment will be printed in our columns.

IN our last issue we printed an account of the plans of an American inventor who seeks to combine airships with elevated railroads. His idea is to equip suspended cars with aeroplanes and he expects to acquire a speed of 240 miles an hour. His use of the aeroplane corresponds to Professor Albertson's use of magnets and is intended to lighten the load. Objections that would apply to one would not apply to the other and vice versa. In printing what is claimed for this "four-mile-a-minute" invention we simply pursued our usual policy of giving information to our readers. We believe that the aeroplane idea is impracticable, but it seemed to be nevertheless interesting and it may result in something commercially useful.

RAILROAD managers everywhere are interested in increasing the speed of trains. In America the great railroad systems are resorting to electricity. For heavy trains going long distances electricity is at present impossible; the wires to carry the high power current have not yet been made. As we have fully described in previous issues, one of the greatest railroad systems in America has

adopted electric engines for its New York terminal, but it has not been able to go further because the wires will not carry the necessary power. There is a fortune for some bright American who will provide the means for supplying fast trains on the big trunk lines with continuous electric power. It will come soon, for there are many minds at work upon the idea.

On the trunk-line railroads a speed of at least sixty miles an hour must be available. To supply the required power by electricity is a problem that is being worked out. On short railroads in the United States it has been solved. As to the progress that may be made in applying the subtle current to the long-distance trains we may not have to wait very long. This, of course, applies to the substitution of electricity for steam upon surface railroads. Electric motors on an overhead right-of-way anywhere would develop great speed; in fact, on the New York elevated railroads a speed of thirty miles an hour is found feasible with stops at stations less than a quarter of a mile apart. On longer stretches of similarly protected roads the only limit of speed is the capacity of the motive power.

It must be realized that the distance covered by a 30-mile-an-hour train depends upon the frequency of stops at stations. On the New York elevated, if a 15-mile-an-hour train went straight through it would get to its final station quite as soon, but with the express trains the electric motors have cut down the time very much.

This dissertation on the comparatively slow speed of the New York City elevated trains may not seem to be germane to the question under discussion, but it is at present the most successful practical elevated railroad structure in the world and its trains have gained wonderfully in speed since steam engines were replaced by electric motors.

UNDER-SEA TRAINS.

IT is not surprising to learn that the French Chamber of Commerce has indorsed the plan for a tunnel under the English channel, but it is a matter for wonderment that the plan meets with so little favor in Great Britain. It is unlikely that the two countries will ever become imbroiled in hostilities, and if that unfortunate condition should happen, a pound or two of dynamite would seal the tunnel. A contemporary compares a channel tunnel to the Panama Canal. Frenchmen originated that great public undertaking and they seem to think that a tunnel practically between Paris and London is not much more of an improbability. Opposition to it cannot come from progressive men. The tunnel is inevitable. It is only a question of time when the tunnel will be built and it will be an important factor in preserving friendly relations between the two nations on the opposite shores of the choppy sea that separates them.

While the Frenchmen may be expected to push along the preliminaries, just as they did in the Panama Canal matter, it will not surprise us if British capital and enterprise should make this great twentieth century scheme a reality, much in the same way that American capital and enterprise have gone to the forefront in commercial progress to make De Lesseps' dream an actual factor in the economies of the world.

The French idea is to use the tunnel for an under-sea railway, with forty-eight trains a day, twenty-four to start from each side at hourly intervals. Such a plan would not be practicable, but the railroad managers would quickly adjust the train schedules with proper regard to the convenience of the patrons. The off-hours could no doubt be used to advantage for freight traffic. But why should we speculate about the operation of a railroad that may not be built for several years to come?

IT is unfortunate that a rip in Santos-Dumont's air bag should put off the solution of aerial navigation indefinitely. The American World's Fair would have formed a picturesque background to the French inventor's triumph—if the airship had not been wrecked before time came for the test.

REPORTS from England are to the effect that the American Westinghouse interests have secured some new large contracts for the electric equipment of municipal railroads. The moral is obvious.

FUTURE OF SUBMERSIBLE BOATS.

THAT we are on the eve of a revolution in naval construction and that in the near future we shall look with accustomed eyes upon submarine, or, rather, submersible vessels of thousands of tons may, perhaps, be considered by many a visionary idea. Their views, however, are not shared by Mr. Allan H. Burgoyne who read recently before the Royal United Service Institution of Great Britain, a paper on "The Future of the Submarine Boat," in which he thus sketched his idea of the subject:

"It will be of large tonnage, the displacement being governed by the extent of the armament and internal fittings; of good speed, at least twenty-five knots on the surface; well armed, by which I imply from four to six torpedo tubes and an equal number of small, quick-firers; well protected by an armored deck, and, lastly, well provided for in the matter of safety appliances, for it would be deplorable if the officers and men who devote their lives to submarine navigation should not be given the same chances in the event of an accident as their fellows of the upper sea; and it is due to the nation that the future policy of our Admiralty in this respect should be made public."

Mr. Burgoyne concludes that Americans have made great advances in this line of naval construction and speaks in terms of high praise of our "Holland" submarine boat. "It would," he says, "be foolish to say that the ideal shape had already been discovered, but the 'Holland' is very nearly all that can be desired."

An interesting comparison is made between the "Holland" and the French *Goubet*; a vessel capable of withstanding the pressure at a depth of about 5,000 feet or very nearly a mile below the surface. The "Holland" is able to navigate safely at 150 feet. The difference seems astounding. Even if we allow the "Holland" a margin of safety equal to 850 feet, the *Goubet* is yet capable of withstanding five times as much external pressure as the "Holland." Mr. Burgoyne points out, however, that the value of this immense strength of the French boat is not apparent and that there is little doubt that any advantage it may confer is negated by the lack of stability inseparable from its form of construction.

"In the 'Holland,'" says Mr. Burgoyne, "we have, perhaps, the nearest approach to nature's submarine—the fish—that it is possible to obtain. The heavy forward part and the fine diminishing tail are the great features of all the 'Holland' craft. This form is so stable that oscillation is entirely absent when submerged especially in the first 'Holland' designs, which are short and stumpy. For although the weight is unevenly distributed, the equilibrium is perfect, owing to the fact that in the bows, which support the major portion of the weight, the buoyance is greater, and can thus sustain it, whilst towards the stern the gradually diminishing surface of the hull reduces the buoyant power and thus equalizes the pressure evenly over the whole length of the vessel."

Concerning his desire to see submersibles of much larger dimensions the lecturer thus explained his views:

"To carry all these things—armor, guns, larger engines for increased speed, more room for fuel, extra torpedo tubes, safety appliances, etc.—a greater displacement is essential. Our latest vessels, *A2*, *A3*, *A4*, have been given a second torpedo tube and a higher speed by six knots than their forerunners, but to obtain this the displacement had to be nearly doubled. Yet even their 200 tons is not sufficient—France is already approaching the 500—and I hope soon to hear of submersibles of six to eight hundred tons (submerged displacement) being ordered. These would be approximately the size of our destroyers, for, be it remembered, if one of them were submerged to the deck, at least 250 tons would be added to the weight of water displaced."

Mr. Burgoyne's idea of the perfect submarine boat is thus expressed:

"It would be a vessel of special type, the shape to be determined by experiment, but with no speciality of form essential, capable of navigating not only on the surface, as an ordinary ship, but also beneath the surface of the sea, and continuing its course in a direct line for the object it is desired to reach, whilst retaining stability in every sense, and being under the complete control of its commander; and besides conforming with these conditions it must

possess the maximum of speed, safety, offensive power and habitability, a trustworthy means of propulsion, and a complete independence of all exterior help while in action."

In the course of his introductory remarks Mr. Burgoyne gave a very interesting résumé of the evolution of the submersible. It is, as he said, hard to believe that whereas in 1890 the French possessed only the *Gymnote*, of thirty tons, now, fourteen years later, they have six submersibles of no less than 422 tons on the stocks. He does not believe with all his enthusiasm that the submersible will ever entirely supersede the surface warship, nor does any other person.

FARMERS AND IMPLEMENTS NEEDED.

ARGENTINA'S future from a commercial standpoint is brought forward, in a manner to command attention, by a United States Government report giving the results of an investigation of the agricultural resources and conditions in our Southern neighbor's territory. It has been a matter of common knowledge that the grain-growing possibilities of the Argentine Republic were immense, but the report indicates that outsiders have really underestimated the situation. The region is well adapted for the growing of grain and the present area devoted to wheat alone is about 10,000,000 acres, but an eminent Argentine authority is quoted as saying that more than 80,000,000 acres in the Republic could be devoted to successful wheat farming, if there were the necessary farmers to do it, while there were other vast areas capable of agricultural development.

The trouble with Argentina seems to be that although it is in the temperate zone it does not attract the right sort of settlers. People living in the northern temperate zones do not seem to care to cross the equator to reach the same kind of a climate in South America. The immigrants arriving are not good farmers and that is what Argentina wants. If the southern republic had the farmers her granaries would prove an important factor in the problem of feeding the world. Her known available acreage is twice that of the United States. In other respects the growth of agricultural exertion in Argentina will be watched with interest in the United States, for this country may be expected to gain increased trade in farming implements as our sister republic extends the area of cultivation of her soil.

OUR fruit exports for the fiscal year 1904 will exceed \$20,000,000, according to Government returns. The growth of this branch of our export trade will be fully realized when it is taken into consideration that of this large sum \$17,000,000 has been added in the last decade. In the previous ten years the growth amounted to only \$1,000,000. People of other countries seem to like our natural products as well as they do our manufactured goods.

ARBITRATION between great nations scored another victory last month when Germany and Great Britain put into force a treaty providing for the settlement by arbitration of differences of a legal nature that may arise in the interpretation of existing treaties between the two countries. The terms are similar, we understand, to those of treaties recently concluded with France, Italy and Spain.

WAR news from the Far East is far from satisfactory. There are no immediate indications of a restoration of peace, and the accounts received of the progress of hostilities are conflicting. One day we learn that 30,000 Japanese have been slaughtered and the next day the number is reduced to 2,800. So it goes with information about the Russians.

GREAT BRITAIN is not disposed to stand for any trifling with her commerce on account of the difficulty between Russia and Japan and the consequence was a fresh scare phase of the Far East war.

IF Russia and Japan could only be induced to stop fighting and arbitrate, what a glorious thing it would be for modern progress!

AMERICAN WIRELESS WINS.

United States Government a Partner in New System That Half-Circles the Earth.

A CONTRACT executed last month between the Government and the American De Forest Wireless Telegraph Company for service in the West Indies and at Panama marks a long step forward in the history of this marvelous method of communication and makes it possible to send a wireless message from a ship at sea off the American coast, near New York, through a chain of stations extending to Japan, China or the Philippines.

The contract is especially notable as the largest of its kind ever executed, and the guarantee of the company to maintain at all times and under all atmospheric conditions communication between stations 1,000 miles apart, gives assurance that obstacles to the successful application of this invention or discovery to the commercial needs of the world have at last been surmounted.

The new circuits will be from Key West to Panama, Porto Rico to Key West, south Cuban coast to Panama, Pensacola, to Key West and south Cuba to Porto Rico, distances of from 450 to 1,000 miles. Between the points large bodies of land intervene and the currents cross and recross each other, so that under such conditions the successful maintenance of communications between stations should demonstrate the ability of the De Forest instruments to operate under any and all conditions.

Like the wire telegraph the wireless owes much to the Government, which was quick to realize the benefits to be derived from its success. The Wei-hai-wei station of the De Forest company, which has been in successful operation for six months, has been repeatedly utilized in the transmission of intelligence of the progress of the war in the Far East when other means of communication have been entirely without avail. The equipment of the Japanese ships for wireless telegraphy enabled them to keep in close communication with each other and with their home ports. The information thus conveyed has been directly responsible for some of the most telling blows struck by Admiral Togo.

It is a source of pardonable patriotic pride that this remarkable instrument is the product of the inventive genius of Lee De Forest, Ph.D., Yale, a young American who has been responsible for much wonderful progress made in wireless work within the past ten years. In the war maneuvers of 1902 and again in 1903 the Government experts reported that this was the only system that operated under all the difficulties attending on the work, and the service during the recent tests conclusively demonstrated the ability of those utilizing it to transmit messages without interference because of the location of similar stations in the same magnetic zone and with the possibility of their interception by other systems totally eliminated.

By the terms of the Government agreement with the De Forest company commercial messages are exchangeable between all stations and ships equipped with the De Forest instruments, whether maintained by the Government or by the company. For this purpose all the war vessels of the American navy will be equipped with the De Forest attuned apparatus, and all messages will be transmitted between war vessels and passenger steamers and between land stations, irrespective of whether they are under the control of the Government or the company.

The chain of communication thus established is practically one system operated in part by the Government and partly by the De Forest company. It is understood that having thus adopted the De Forest system and entered into such a combination with the company controlling it the Government is guaranteed against the employment of the system in any manner which might prove detrimental to its interests, and it is reported that its exclusive use for war vessels has been guaranteed to the United States navy.

The vast possibilities opened by this arrangement can be better realized when it is stated that the chain of stations operated by the De Forest company and the Government will extend from the American New England coast, at Boston and Providence, through New Haven, New York, Lewes, Del.; Norfolk, Cape Hatteras, Pensacola, Key West, Guantanamo, Porto Rico, Panama, Lower California, San Francisco, Portland, Seattle and Cape Flattery, thence to the Orient by way of Dutch Harbor, the most southerly point in the Aleutian Islands, to Kamschatka, Japan, and the Philippines, with Wei-hai-wei, in China, returning by a southerly route to Guam, Hawaii and San Francisco.

Thus the chain runs half round the world, touching no territory not under the American flag except Wei-hai-wei, where the station has been in operation for months, and in Japan, where the concession has been obtained and where the service will be operated in conjunction with that of the Japanese Government. The establishment of a station at Washington, on the Pacific Ocean coast, which will take place before long, although the fact is not generally known, will enable messages to be exchanged by wireless telegraphy between the seats of Government of the United States and Japan by an American system operated entirely on American territory, except the one station in Japan.

At Panama the highest mast in the world for wireless telegraphy is being erected, while at Cape Flattery, Washington, the largest station in the world is being built. The one at Dutch Harbor, among the largest, is in operation, being the key of the Alaskan business.

Life of American Machinery.—Although the rapid improvements in electrical devices make apparatus apparently out of date in a very short time, a good deal of early American electrical machinery is still in use and giving a good

account of itself after prolonged years of operation. Some of the early Edison dynamos are still doing good work. On the other hand, a great deal of old machinery has been worked over. The managers of a steel plant at Hamilton, Ontario, say that they have worked over into steel the iron of the original Niagara suspension bridge, that of the Victoria bridge at Montreal, the hull of the once-famous Atlantic steamship City of Rome and the framework of the Great Eastern.

Telephoning Over a Ray of Light.

CONSIDERABLE progress is making in the development of wireless telephony. An exhaustive series of experiments which have been carried on during the past few years at the headquarters of the American Telephone and Telegraph Company, in Boston, under the direction of Mr. Hammond V. Hayes, have produced results which are now being shown for the first time to the public at the St. Louis Exposition and which receive some attention in a recent issue of the *American Inventor*.

Mr. Hayes' apparatus, known as the radiophone, admits of effective telephoning over a ray of light for considerable distances. Words spoken at the company's offices in Boston have been distinctly heard through a telephone receiver at Fort Independence, two miles down the harbor. The appliances in detail are very simple. A searchlight of the ordinary type is manipulated from a window, the glass being removed from the front of the lamp to let in two telephone wires which are attached to the wires that constitute the arc circuit. By the superposition of one circuit upon another and by use of a telephone transmitter it is easily effected. On speaking into the instrument a series of fluctuations is started, causing variations in the quantity of illumination developed by the lamp and therefore in the intensity of the beam thrown off by it. Of course, the variations in the stream of light cannot be detected by the naked eye, but they exist, and when the light streak has been photographed their influence is easily discerned.

The searchlight is thrown upon a receiving station at a reasonable distance where a parabolic mirror gathers in the light rays as they arrive, focusing them upon a tiny glass bulb containing a little bar of selenium. This metal, wound around and around with thread-like wires, is in a telephonic circuit, and, by virtue of its well-known characteristics, it varies in conductivity according to the intensity of the illumination to which it is subjected. With any alterations in the power of illumination the quality of the current transmitted varies correspondingly. The little bit of selenium, in other words, responds to every minute change in the light intensity of the dazzling beam and causes the current of the circuit to convey to a telephone receiver a reproduction of whatever is said at the other end of the light beam.

One of the fields of usefulness that has been suggested for the radiophone is in wireless telephony at sea. In order that conversations may be carried on over considerable distances it is only necessary that each ship shall have its own searchlight and receiving apparatus. Objection has been raised that it will be extremely difficult to keep the searchlight trained upon the bit of selenium, especially in rough weather. It is certain, however, that marksmanship may be developed with the searchlight as well as with the rifle.

Another suggestion which has been made is that music may be transmitted by use of the radiophone. If, for example, a military band should play a march in an electric-light station anybody in the vicinity could listen to the music, provided he had access to an incandescent lamp connected with the system. It would be merely a matter of bringing a telephone transmitter into connection with the generating machinery at the lighting station in substantially the same manner in which it is connected with the searchlight. When given such connection every note played by the band would cause a fluctuation in the electric current that could be felt in every arc and incandescent lamp in the circuit. All one would have to do would be to establish a selenium cell near one of the lights, attach a telephone instrument and listen to the music. The mysterious metal responds to the changes in the current in so wonderful a fashion and with such sensitiveness that every sound is conveyed faithfully, regardless of the intervals between sounds. During recent experiments in Boston calls played upon a bugle near an arc light were heard distinctly over the rays at a distance of several hundred feet.

A German View of Our Foreign Trade.

A GERMAN trade paper, *Export*, recently printed a series of articles devoted "to studying the methods by which American goods are supplanting German goods in foreign markets." The articles consisted largely of letters from Germans living in Mexico, Venezuela, Brazil and Australia. The writers explain that the German houses are being beaten because they are unwilling to guarantee agents fixed salaries, as the Americans do, and also because they depend on sending out catalogues, whereas the Americans keep stocks of goods in established agencies, where buyers are able to purchase after seeing the goods, and therefore prefer to deal with Americans. The German agents, it is added, are largely taking service with American houses, because of the better terms offered them and owing to their handling exclusively American wares. *Export* urges the German manufacturers to abandon their "penny wise, pound foolish policy" and give their agents decent fixed salaries, so as to enable them to withstand the "flattering offers of their American competitors," adding: "This is all the more important since American competition in the world's markets will evidently grow keener during the next ten years."

British Comment on America as a World Power.

OUR esteemed contemporary, the London *Spectator*, recently printed an editorial on the subject of America being a "World Power," from which the following extracts are taken:

"To deny to America the right to enforce compensation for injuries caused by Turkish misrule is, therefore, to exclude her from the benefit of the general rules applied to all other great civilized states, and, in fact, to deny her right to be included in that honorable list. Upon what principle is such a denial to be based? America is as populous, as powerful and as civilized a state as there is in the world, and her geographical position has nothing whatever to do with the matter. Or, rather, it has this to do with it, that as she does not want, and could not want, territory in Europe, she is much more likely to be disinterested and impartial than any other power. With any of the European powers, humanity, or an individual quarrel, might be a pretext for aggression; but America cannot even wish to aggress, and may be trusted, if she demands any change, to desire that change because of the motive assigned.

"It is said, indeed, in some quarters that America being so distant a power can have no good reason for interference; but that, surely, is matter for her own decision, not the decision of Europe. She has as much right to her own ambitions, her own purposes and her own complaints as any other power, the fact that her ambitions cannot be territorial being in her favor, not against her. It is true that, being comparatively a new power, she is not aided or hampered by volumes of old treaties, to be quoted or disregarded as occasion serves, but that fact renders her more free, not less free, to act upon general and civilized principles.

"There is in reality no case against American 'interference' except the reluctance of diplomatists trained to consider Europe as their world to admit that a new state has arrived at such a position in population, wealth and all attributes of civilization that it must be consulted when it wishes to be, and has as much right to plead the general interests of mankind as any other state. That she will be consulted is pretty clear, for, after all, diplomatists, like all other politicians, have to deal with facts. No state is now so strong that, unless compelled, it will declare war on the Union, and a combination of states against her is barred by the refusal of Great Britain to allow any such attempt. Seated on two oceans, with unlimited wealth, and a population possibly more patriotic than that of any other white state, her weight must be felt in every corner of the world. The trend of events, too, is in her favor. For the next half-century the struggle of civilized mankind will be for dominance on the Pacific, and while the Union is already strong in that vast ocean, from the moment the Panama Canal is cut she will be the strongest state upon its shores. Alone, or in alliance with Japan, she could debar Europe from the trade of the future or from expansion in the Far East.

"To talk, therefore, if any one has talked, of her being an intruder in European politics is positively foolish, the only wise course for the diplomatists being to admit her at once, before they must, to all European councils, and to treat her in all matters, whether of importance or only of ceremonial, as an honored member of the great European family which claims the primacy of the world, and certainly disposes of the greater portion of its strength and wealth. America is no longer an outsider, and the attempt to treat her as one does but turn valuable friendship into bitterness."

Electricity in Japanese Warfare.

ELECTRICITY'S use in war is becoming more and more useful. The American periodical, *Electricity*, in commenting upon the subject, says:

"The world is naturally astounded at the remarkable success of the Japanese in the war with Russia. To all the European powers Japan was merely a name for an island race of artistic tastes, gentle manners and a semi-barbaric civilization. But the revelations that have come to their startled eyes show underneath the artistic tendencies, peaceable demeanor and Oriental splendor the practicability, aggressiveness and thorough knowledge of modern science that places Japan on a par with the so-called mightier powers, whose vaunted civilization and progressiveness have been accepted as representing the fruit of generations of academic learning.

"It is said that thirty years ago the Japanese were no better advanced than the Chinese. If that is the case to what can we attribute this remarkable transformation? Is there in the Japanese spirit the same love of science that is known as one of the greatest characteristics of the German people? Is Japan discovering within herself latent powers which have recently exhibited themselves as adaptability in the handling of modern machinery and inventiveness in the field of electricity and high explosives?

"The Japanese have shown thorough familiarity with the use of electricity in naval and military warfare. It has been stated on good authority that their wireless telegraphic apparatus is an improvement on existing types, and their electrical engineers are men of thorough training and remarkable skill, ready for any emergency that may arise in mortal combat.

"The great battleships and armored cruisers are in a sense electrically controlled, and the torpedo boats are among the first in the complexity of their electrical equipments. Perhaps it may be said that naval warfare particularly is becoming, in the light of hosts of modern electrical improvements, electrical warfare, and for that reason alone the destiny of Japan is not only in the hands of her admirals and generals, but her electrical engineers."

British Shops Adopt American Innovations.

AMERICAN shop methods are being adopted in Great Britain, to a great extent, and in most cases are meeting with favor on the part of employer and employed. It has been heretofore the custom for workmen to make a very early start and to quit work at 8 o'clock for breakfast. What is called the "one-break" system has been extensively adopted and welcomed. These innovations have been made the subject of a report by Rufus Fleming, United States Consul at Edinburgh, and, under the heading, "Americanizing Scotland's Industries," he says:

"The one-break system was first introduced into Great Britain by a Leeds firm in April, 1901, and was quickly imitated by another firm in the same town. The workmen at first raised an objection, on the ground that the day was too long to work with only one break, and asked either for a reduction of hours or a withdrawal of the system. The matter was consequently discussed at a central conference of the Engineering Employers' Federation, where it was stated that eighty-three firms throughout the country, of which twenty-six were federated firms, had adopted the system, and were on an average working a fifty-one-hour week.

"The experience of these firms, it was stated, was that the workmen, after they became accustomed to them, preferred the altered hours. It is contended that this is a much better method both for men and masters. The men do not start hungry, and, being, therefore, fresher and better rested, they are able to pay more attention, and, consequently, turn out more and better work. Then, again, the waste, inconvenience and delay caused by stopping, restarting at breakfast time, as well as the annoyance of men coming in late and the other evils of the two-break system are done away with, the output is increased and the men are healthier and more physically fit to undertake the duties of the day."

A brewery employing a large number of boys recently adopted the custom of serving coffee and rolls on the premises. They also established a standard day's work, after the performance of which the lads were allowed to depart. The result of this was that the output was increased, and at the same time the boys had more time for recreation. Both of these steps were radical innovations. The introduction of other similar workshop features which have long prevailed in this country are also noted in the report.

Britain's Pacific Provinces Drift Toward United States.

THE evolution of the North American Continent proceeds slowly, so far as its political aspects are concerned, so that while we do not indorse all that is contained in the following letter from an esteemed correspondent in Montreal, Canada, we think it is of sufficient interest to use for the information of our readers in other parts of the British domain: "The relations between British Columbia and eastern Canada are said to be by no means of a close or friendly nature, and it is beginning to be feared that they will in the course of time become even more strained. The business interests of the country on the western slope of the Rocky Mountains, in America, are becoming year by year more interwoven with those of the United States to the South, and along the Pacific coast the population is more American than British. The practically unrestricted influx of Japanese, owing to the pressure of the British Government on the Ottawa authorities, irritates the mining and fishing population, who do not consider the increase of the tax on the Chinese to \$500 compensation for the toleration of the others. The result is a dangerous cleavage in sentiment and interests between the Canadian Pacific province and the east, with a corresponding attraction toward the country to the south of it. Close observers of the situation in British Columbia have come to the conclusion that it is only a question of time when the province will seek admission to the United States. How to avert it is a problem which Canadian public men have to consider very carefully, but it is admitted that if the ties of business relations continue to be strengthened and the population on each side of the artificial boundary to intermingle as it is doing in its social intercourse, a distinct separation from the rest of Canada becomes inevitable."

Rails for Japan Are Contraband of War.

AN American steamship, the *Ormley*, sailed last month from New York with a cargo of 7,000 tons of railroad material for Japan. She cleared for Fusani and other ports of the Far East. Under present conditions the ship's cargo is contraband of war. So would be flour, oil, rice, corn or anything else that can be taken to Japan. There is no secrecy about these shipments to Japan or intermediate ports, and the underwriters have raised the ante on war risks. The possibility of Russian vessels appearing off the entrances of the Suez Canal, entailing capture and possible confiscation, has led to more than one steamship deserting the regular courses and "cutting across lots," so to speak, in order to reach their destination safely.

There is nothing wrong from any standpoint in these sailings. The Japs, or Russians, as the case may be, purchase here food or supplies that are declared contraband of war, as affording "comfort to the enemy." The ship owner, the shipper and the underwriter are all aware of the risk of capture and estimate accordingly. It is simply a case of buying and selling in the market; certain risks have to be encountered and are estimated accordingly. Those interested take their chances of capture as a speculation, and that is all there is to it.

PHONOGRAPHIC PANTHEON.

National Phonetic Archives Established in America and Collections Started by Great Universities.

TO a majority of the public the phonograph has come to be considered rather as a toy than as an instrument of serious scientific possibilities. This illusion should, however, be dispelled by the importance attached to its work by eminent psychologists. Phonetic archives have been established recently in the National Museum, in the Congressional Library, and at Harvard University, the idea being to preserve the voices of the great men of the present generation for posterity by means of phonographic reproduction. The authorities at Yale University also are contemplating a similar collection.

These phonetic archives, it is intended, shall include records from such persons as will presumably have permanent historical interest for America. An advisory committee of eminent Americans has prepared a list of ten living Americans of the first historical importance whose voices will be preserved.

The practical difficulties of preparing and preserving these autograms have now been overcome. A comparison between the cost of producing these autograms and the printing of books will show the former to be much the cheaper of the two. It is besides possible to renew these records from time to time without their losing their lifelikeness. In this way the actual tones of a voice may be heard forever. The autograms are less affected by the ravages of time than books.

The three phonetic archives recently established have commenced their collections with several excellent reproductions of the voice of the Emperor of Germany. The cylinders were prepared under the direction of Dr. Edward W. Scripture, the psychologist of Yale University. Two cylinders were prepared with the Emperor's assistance. One of these, intended especially for Harvard, contains the Emperor's observations on Frederick the Great; the second is a short disquisition on "Fortitude in Pain."

A complete collection of voice records on the lines indicated would be as comprehensive as any collection of books, since every phase of human endeavor could be represented and done full justice to. The founding of such a pantheon is believed by many to be anticipated in the scientific phonographic work recently commenced at Yale University. These investigations, which are entirely novel in their way, are to be conducted by members of the faculty. The work is made possible by an endowment by Andrew Carnegie. The plan comprises the collection of distinctive dialects throughout the country and their preservation in permanent form at New Haven.

A national phonetic survey is being made under these auspices. A feature of the collection is to be the dialects of the North American Indians, especially of the tribes which are rapidly disappearing. These records will afterward be preserved at Herrick Hall, the Yale psychological laboratory.

A serious undertaking of this nature under the auspices of a great university, of course, establishes the practical scientific value of the phonograph. That the work should be carried on as the result of an endowment is also suggestive of the possibilities of future development along similar lines.

The appeal to our sensibilities of these autograms is, of course, far more intimate than that of even the greatest books. To appreciate the value of these records to the future it is only necessary to imagine our own attitude toward a similar record of the past. The autograms of famous men, especially of their speeches or sayings upon famous occasions, even of the last few years, could they have been preserved in this way, would have been among the most valued relics of our generation.

Could the last speech of McKinley and the famous oration of Lincoln at Gettysburg have been preserved in this way they would be eagerly listened to at the present day, reverently, and handed down to posterity. And such a record of Washington's farewell address or of the original reading of the Declaration of Independence would doubtless be more carefully preserved than any single book which the country has produced.

The phonetic survey spoken of above indicates the possibilities of the phonograph along one line of scientific investigation. The study of languages also would be greatly assisted. There would be no dead languages in the future. Indeed the advantages of such records seem to be practically limitless.

Largest Magnet Has Important Uses.

INJURIES from particles of steel being violently cast into the eye, cutting their way through the various humors and making impossible their removal by methods formerly employed, have become very frequent since the employment of what is called the new steel, with the consequent increase in the speed with which metals are turned in lathes. Electro-magnets of large dimensions have been so constructed lately that the oculist can use the magnetic attraction to draw the minute particles of metal that are buried in the humors of the eye to the surface just under the cornea, and by cutting an aperture through it remove the metal. But if the foreign body has gone too far in the magnets at the various ophthalmic hospitals fail to have power enough to bring within the reach of the oculist the metal particle, and consequently the patient loses his sight.

About the middle of last winter Dr. F. M. Wilson, of Bridgeport, Conn., suggested for such purposes an electro-magnet that was altogether beyond the facilities of the philosophical instrument-maker and partook more of an

engineering problem. It required an iron core of several hundred-weight and about a mile and a half of large copper wire, and was to be somewhat over four feet high, with coils of wire as large as a water-pail.

Work was commenced on this instrument early last January in a Bridgeport factory, and recently this magnet, the largest in the world, specially constructed for the use of an oculist, was placed in the X-ray room of the Bridgeport Hospital. The powerful electric current required to energize this magnet necessitated the placing of a special wire circuit from the electric generator.

The instrument is a beautiful piece of scientific work and has some minor devices that make it unique. From its great weight it was undesirable to make it movable, as previous electro-magnets are, and so it is placed in a vertical position, and the patient, standing near, rests his face on a brass support, his eye just clearing the point of the magnet. This point can be removed so that it can be sterilized.

When the electric current is turned on this great magnet attracts pieces of iron so strongly that a strong man cannot remove them, and there are many curious experiments that can be performed with this great magnet, but it is its usefulness to the oculist in saving unfortunate artisans from blindness that gives it its highest value. In diagnosing a case of injury to the eye its negative information is often a valuable property. Frequently a workman attributes to an imaginary particle of steel in his eye the pain arising from some accidental blow. The magnet speedily demonstrates the absence of an interior irritant and proper treatment in a few days removes the inflammation which has been caused by an external hurt.

Again, a man who complains of pain, although he believes its cause has been removed, is placed before the magnet and the current is turned on. In an instant, with a cry of pain, he clasps his face with his hands and jumps away. A particle of steel which he did not believe could be in his eye has been moved by the attraction of the magnet, causing the agony.

The treatment is now far different from the former case. The steel is drawn from the surface of the eye and by a slight operation is removed and the sight saved. It is this differential diagnosis which to the oculist is one of the most valuable properties of this powerful electro-magnet.

Facts Regarding the World's Railroads.

RAILROAD mileage of the entire world, as shown in the annual statistics of the *Archiv für Eisenbahnwesen*, giving the figures for the end of the year 1902, show the mileage of railroad at that time in each grand division, was as follows: Europe, 183,997; Asia, 44,358; Africa, 14,554; North America, 233,186; South America, 28,822; Australia, 16,038; total, 520,955.

The additions to the railroads of the world for seven successive years have been, in miles:

1896.	1897.	1898.	1899.	1900.	1901.	1902.
9,796	10,747	10,864	13,533	10,800	16,551	13,338

This gives a total of 85,629 miles for the seven years, being an average of 12,233 miles per year. Of the 520,955 miles of railroad in the world, 270,881 miles are in the United States and in Great Britain and its colonies. The South American countries (including the West Indies) added but 234 miles to their lines in 1902 and but 1,804 miles in the four years then ending. Brazil is credited with no addition since 1899, and Argentina with none in 1902 and but 406 miles since 1899.

According to the authority quoted, investments in the railroads of the world amounted at the end of 1902 to \$34,964,342,000, of which more than \$18,800,000,000 have been spent on the 184,000 miles in Europe and \$16,160,000,000 on the 337,000 miles in the rest of the world. The country with the highest capital cost per mile is Great Britain (\$256,839); the nearest approach to it is Belgium (\$150,239). The cheapest in Europe are the Finnish State railroads (\$32,104), but the private railroads of Sweden are put down at \$22,558 per mile. Elsewhere the colony of West Australia has spent but \$27,597 per mile for its lines (light, narrow-gauge railroads).

Novel Use for Telephones.—The telephone was put to a novel and unusual use in Washington County, Pa., U. S. A., recently, enabling two boys, sons of farmers, to hold their positions in their classes in the public school, from which they will graduate in another year. Smallpox broke out in the neighborhood in question, and the two scholars were among the early victims. The home was quarantined, and there was every indication that the instruction which they had been receiving would be cut off for an indefinite period. But the teacher was resourceful and willing. He called up the stricken home one evening and proposed that the boys study their lessons as usual, and he would hear them over the telephone. The idea was eagerly received. Each evening they took down the receiver, and the teacher, located several farms away, heard them recite. Neither suffered through their absence from school, and their chances for graduation are just as bright as before the disease entered their home.

American Lawn-Mowers.—"In lawn-mowers those from the United States are largely preferred in Australia, being better adapted to local wants. Most of our British lawn-mowers act all right on level lawns, but are not much good when the ground is uneven. The Australian market, like most others, is mainly to be won by sending out the right sort of goods and getting known as being thoroughly reliable."—*London Correspondence Farm Implement News.*

Moving Pictures in St. Louis Machinery Hall.

IT is an interesting fact to those who have not followed carefully the growth of the electrical engineering in the past decade, that all but a small fraction of the space occupied by the biggest individual exhibitor at the American World's Fair is devoted to an operative display of electric generating units and auxiliary electrical apparatus. It will appear still more worthy of comment that the space of this exhibitor in the Palace of Machinery is enclosed within walls of a pure classic architecture, and that in one section is a beautiful little theater which seats comfortably 350 persons. The unattractive Machinery Hall of expositions of former years, a tangle of engines, belts, and exhibits framed only for the technical visitor, has given way at St. Louis to Machinery Hall, which ranks in popularity with the other big exhibition palaces at the Fair, and offers to visitors, in the display of biograph and mutoscope pictures in the Westinghouse auditorium, the biggest free show on the grounds.

The Westinghouse pictures, which were shown last month for the first time, and are now displayed at regular intervals every morning and afternoon, are distinct novelties in a double sense. They are the first interior biograph pictures ever taken—if exception be made of the two or three instances in which biograph pictures of prize fights in enclosed arenas have been obtained by the arrangement of an immense number of arc lamps directly over the heads of the fighters, 400 lamps being used at one affair. Furthermore, as they practically take the sightseer on a tour of inspection through the vast electric manufacturing works in the Pittsburg (U. S. A.) district, they may be regarded as a new style of exhibit—a display which supplements the regular exhibits at the Fair by a complete reproduction of the work-a-day scenes involved in the manufacture of the machinery exhibited.

The process by which these pictures are taken is of interest to all photographers and to all persons who have waited to see the biograph picture take its place as an important feature of industrial promotion and education. The pictures themselves appeal to the most frivolous. There are forge pictures, in which sparks fly, hammers hum and furnace fires flare. There are foundry scenes in which the spectator sees the pouring of molten metal from 25-ton kettles, and pictures in which enormous steel billets are taken heated white from the furnace and hammered into shape by steam hammer blows which seem almost to shake the auditorium in which the pictures are displayed. There are panoramic views of great American machine shops, in which the camera was carried down the aisle suspended from great traveling cranes. There is a trip from Pittsburg to Stewart, thirty miles on a railroad, with glimpses of the points of interest en route. There is a scene of East Pittsburg depicting the evening exit of 9,000 employees from one big factory.

Biograph interiors have always been regarded by photographers as an impossibility. In order accurately to reproduce motion a camera speed of 900 pictures a minute, or 15 a second, is regarded as necessary. Up to the time of the perfection of the mercury vapor lamp, the invention of the son of the late Abram S. Hewitt, of New York (which was described in *THE AMERICAN EXPORTER* a year and a half ago, when it first came out), nothing but clear sunlight or the massing together of an enormous number of arc lamps made such shutter speed possible. To erect 400 arc lamps in order to obtain a single interior motion picture in a shop or factory was out of the question. The expense of such an arrangement and the impossibility of obtaining sufficient electric current for such an installation in all but a few places were the barriers that stood between the biograph picture and wide success. The mercury vapor lamp has removed the barrier. A comparatively small number of the vacuum tubes shedding forth their brilliant greenish light will make biograph pictures possible in the blackest workshop. A number of these lamps suspended in series may be carried down a factory aisle in advance of the camera, wherever a factory is equipped with traveling cranes overhead, and mutoscope panoramic views of the entire length of a long building's activity may be obtained.

The biograph picture thus comes into prominence as a live competitor of the still print in all advertising and publicity work. Boards of directors, who have not recently visited the industries which they control, may have displayed before them at any place the working conditions as they existed in their properties at any desired date. Scenes on a theater stage may be perfectly reproduced. Every gesture of the platform orator or the pulpit preacher may be caught for all time. An hour in the life of any prominent man at his desk or the general activity of any newspaper office or commercial shop may be shown on the lecture platform at comparatively small expense.

Royalty Declares World's Fair Wonderful.

PRINCE GEORGE and Prince Konrad of Bavaria last month visited the American World's Fair. The princes were enthusiastic over the Exposition. "I am very favorably impressed with the city of St. Louis and the Fair," said Prince George. "My brother and I have had a delightful stay. The magnitude and beauty of the Exposition impressed me most. The Fair is so large and beautiful that one almost loses sight of the elegant exhibits in all the buildings.

"I was particularly pleased with the illumination of the buildings at night. I have never seen anything prettier than the St. Louis World's Fair buildings when outlined at night with their millions of electric lights. The whole scope of the enterprise has deeply impressed my brother and myself, and we believe the American people deserve much credit for what they have done. It was

quite gratifying to see the splendid exhibits of Germany. Germany seems well represented in every department of the Fair, which is a source of gratification to all her sons. I am sure that Germany will send many visitors to see what awaits them at beautiful St. Louis."

Mexico at the American World's Fair.

RICH natural resources, varied industries, expanding commerce, high national ideals—in these words may be summarized Mexico's showing at the American World's Fair. Both American and British capital is being steadily directed into Mexican mining, and during the next few years a great advancement is assured. But this is merely one of the many indications of national prosperity. The observer has only to inspect the fibers in the Agricultural Building, the timbers in the Forestry Building, the railway works and harbor works in progress, as shown in the Palace of Transportation, to realize that the Republic, under stable government, is steadily advancing all along the line, showing conclusively that nearness to the United States is a decided benefit to the country.

The Mexican pavilion is one of the most charming buildings in the World's Fair grounds. It occupies a place of prominence, its architecture is chaste and elegant and it has surrounded itself with a wealth of beautiful shrubs and flowering plants characteristic of the country. The interior is even still more artistic, but comfort has not been sacrificed to mere adornment, and the pavilion has become a favorite resting-place all day long for throngs of visitors. There is much to see and admire—the magnificent floor of mosaic tiles, the luxurious furniture, the windows, some of them in stained glass and others reproducing by photographic process choice glimpses of scenery. But the moral of the whole is that everything in sight is from Mexico, showing that the country stands high in modern artistic handicrafts.

Throughout the Exposition Mexico has adopted the principle of collecting exhibits. There is no attempt to advertise the names of individual producers or manufacturers. The articles displayed are simply representative of the nation—carefully selected and effectively grouped. And to give the fullest advantage to this admirable system, the Government has erected in every building a special pavilion, rich and ornate in design, draped with the national flag and catching the eye of the sightseer from long distances. The Mexican commissioners certainly have carried out their task with admirable taste and judgment and with the most complete success. With eleven separate courts, each covering an ample floor space and filled to repletion, any exhaustive cataloguing of the exhibits within the limits of a newspaper article would be impossible.

Germany's Imposing Exhibit at American Fair.

AMONG all the foreign nations exhibiting at the Fair only Germany matches Japan in richness and splendor of display, writes James Glen in the *August World's Work*. All the unequaled sweep of German education, classical, medical, technical, scientific, historical, is shown in models, appliances, specimens and pictures with unprecedented minuteness. Germans can teach each other how to live—German rooms, German carpets, German furniture, German ware, German food, German drink are lavishly presented with suggestive effect. Five-sixths of the German domain is in colonies over-sea; the methods and results of German colonial development are made clear in interesting object lessons. German art shows an uplift; its evidences are here. By the direct command of the German Emperor—in some measure to reciprocate the American hospitality to Prince Henry, but mainly to tell America what Germany is—the German nation has outspread its resources and achievements in a picturesque and significant array. Wherever the red and black and white colors entwine the pillars of a section at the Fair, or the black Prussian eagle hangs overhead—and this is almost everywhere you turn—German genius has exploited itself richly and instructively.

Panama's Progress Paved with Our Cash.

JUDGING from a brief report forwarded to the State Department by United States Consul Gudger, at Panama, it would seem that the spirit of progress has been aroused in the new Republic of Panama by the receipt from the United States of \$10,000,000, the amount due on account of the interoceanic canal contract. Large sums have been appropriated by the National Assembly for public works of magnitude in each of the seven provinces of Panama. By the middle of August the President of the Republic will have despatched engineers and architects to the several provinces to prepare plans and specifications for the contemplated works. These are to be submitted by December 31st next.

An important feature of the act of the Assembly is that it gives the President the right to admit free of duty all material to be used in these public improvements. The scope of the works includes the erection of houses for the governors, police stations, schools, prisons, hospitals, boring artesian wells, erecting bridges of iron and wood across rivers and streams, opening up public roads through the interior, cleaning harbors and opening up rivers, establishing electric plants in municipalities and erecting lighthouses.

It will be seen that the Republic of Panama promises in the near future to afford not only a field for the efforts of adventurous mechanical workers, but an extensive market for many kinds of raw and manufactured materials produced in the United States and abroad adapted for the purposes indicated.

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Have been on the market over 46 years,
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Our Motto Is: **QUALITY** in Every Instance.



New Michael Lawn Swing.

For grace, solidity and beauty the New Michael Four-Passenger Adult Lawn Swing has no equal. All parts are bolted or screwed. We use no nails except in chair slats. No tools required in setting up. We guarantee the New Michael Four-Passenger Adult Lawn Swing to be the best made. Opens and closes like a jack-knife. Contains about 20 cubic feet each, and weighs, each, 150 lbs.

Price, per half dozen.....\$30.50



Michael's Folding Rocker.

Is the neatest and best article ever placed before the people. Folds as shown in cut. Painted red or green, or natural wood finish.

Six Folding Rockers, crated, containing about 14 cubic feet; weight, 48 lbs.

Price, per dozen.....\$9.00



Michael's Lawn Settees and Folding Chairs.

Our Lawn Settees and Folding Chairs are the most practical ever placed upon the market. The curve in back is exactly right. Painted red or green, or natural hard-wood finish. Six 5-foot Settees, crated, containing about 25 cubic feet; weight, 96 lbs.

Price, per dozen.....\$18.00

Six Folding Chairs, crated, containing about 14 cubic feet; weight, 30 lbs.

Price, per dozen.....\$6.00

NOTE.—The prices above quoted are f. o. b. New York City.

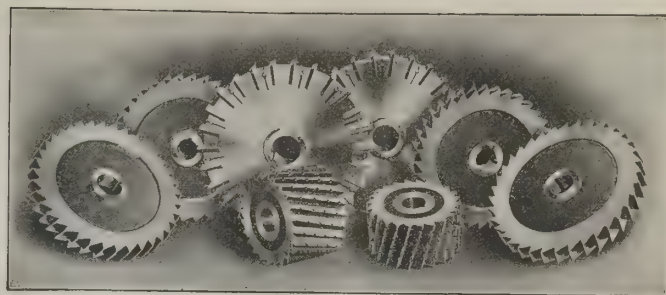
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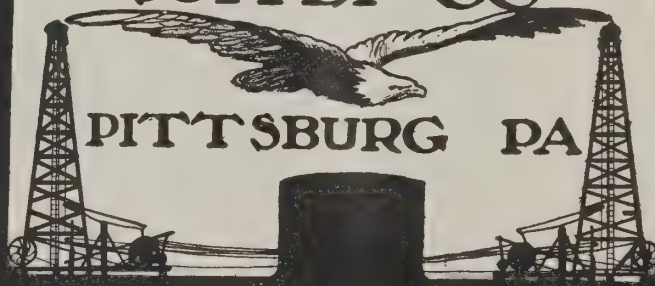
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"Booze" in Business a Lost Art

A FEW months ago we printed an editorial showing the decrease in liquor-drinking as a means of creating or doing business. The last issue of the *Shoe and Leather Gazette* has an interesting article following up the subject. It should be noted that the word "booze" is a colloquial expression, which means intoxicating liquors. What the *Gazette* says is partly a repetition of what we have previously printed, but it is none the less worth using as showing one of the reasons for the progress that this country is making:

"It is evident that the art of mixing 'booze' and business is rapidly becoming a lost art. There used to be chaps who could carry a heavy load of business, floated in liquor, who seemed really to sail better when loaded to the line with wet goods, but they are now rare. The trouble about combining the two is that this age demands specialization. A man must be all one thing, as near as he can, if he wants to make a mark. If he wants to succeed in business he must not divide his time. If he wants to become an exponent of the distilling or brewing business, he can get along much better by devoting his whole time to the job.

"Business methods have changed in regard to the use of liquor as a lubricant in business. It used to be that the man with the greatest tank capacity was the one to send to certain localities to sell goods. Some States appeared to have their business affairs all in the hands of men with well-developed appetites for liquor, and the salesman who traveled there had to be a good fellow. Such communities are now scarce, and growing scarcer. Merchants whose trade is worth having are not to be cajoled into giving orders through the medium of a few fine samples of exhilarating waters. The merchant of to-day wants to be thoroughly sober when he buys goods, if he is half full every other day of the week. In fact, it is very advisable that he should be in a cool, calm, calculating state of mind. So the salesman whose principal characteristic was his capacity for alcoholic assimilation has gradually dropped down the list. He is seldom called for.

"And it is not only in traveling salesmanship that the non-drinker (or at least the man who does not make a specialty of it) has slipped along toward the front of the procession."

A recent issue of the *Topeka Merchants' Journal* has some thoughts on this line in which it largely confirms what the *Gazette* asserts on the points mentioned. It says:

"The new mayor of Kansas City, Mo., U. S. A., has announced that no man who gets drunk will hold a job under the city government of Kansas City if he can help it. There was a time when a mayor of a town like Kansas City would not have dared to make such a statement, but as people learn more sense the 'boozier' is going out of business all over the country.

"The biggest railroad companies won't hire men who are known to drink, and other employers are following the example of the railroads. No man is fit to do good work when he is full of budge, to say nothing of the money he wastes.

"High wages and short hours do not help the man who gratifies an appetite for 'booze.' The other day we were talking with one of the Kansas World's Fair commissioners regarding the laborers who work on the St. Louis Exposition buildings. Many of them make from \$8 to \$16 per day, but a good many of them spend at least three-fourths of that amount on 'booze,' and when the summer is ended few of them will have a dollar ahead."

American Army Is a Great Commune.

CAPT. W. E. FRENCH, U. S. A., has contributed to the *Arena* a remarkably interesting article regarding the standing army of the United States.

The subject is treated from a point of view that is entirely original, and even those of our readers who are not interested in armies will find it worth reading. Captain French says:

"There exists to-day in our country a practical, working model of a socialism on a small but by no means minute scale, backed by a paternal government and differing superficially only, except in one important but readily modified particular, from an almost ideal commune. It has been running smoothly for over a century, comprises about sixty thousand people in its regular establishment, and perhaps twenty or thirty thousand that are of it but not in it, although enjoying many of its privileges, and at one time it had a membership of over two million. This socialism has its being in an organization that is popularly supposed to be, and in some respects is, a despotism—a case of the lion lying down with the lamb inside, or of 'out of the strong cometh forth sweetness,' the lion in this instance being the United States army.

"The United States is our employer, taskmaker, paymaster and most kind and considerate public parent. We live on Government land and in Government houses, the use of both being part of our perquisites and both being kept in order free of expense. Our pay is generous, our work (in time of peace) not arduous, and each is supposed to be proportioned to our respective abilities and to age and length of service. We are allowed, gratuitously, the use of land and water (all the natural opportunities, in fact) but are not permitted to employ them for purposes of speculation, extortion or monopoly, nor must we use them to exploit labor or the public. We enjoy free certain other valuable allowances—comfortable, artistic, modern shelter; medical and surgical attendance, including nurses, appliances and drugs; transportation when trav-

eling on duty, with a fair baggage allowance and sufficient mileage to cover all extra expenses; ice where it can be harvested (at cost where manufactured); ordinary household repairs; access to tools and machinery; music of a high grade; a fairly comprehensive library; golf links, tennis courts and ball-grounds, toboggan slides, skating rinks and swimming pools; a chapel with a salaried chaplain and no pew rent, and an amusement hall, which is always a fair ballroom and frequently a tolerable theater. We may buy of the Government, at net wholesale rates, food, fuel, light, clothing (all free to the enlisted man, being a portion of his rations and allowance), weapons and certain articles of furniture. We are furnished with stoves, furnaces, ranges and cooking utensils; provided with feed for horses when on mounted service; allowed commutation of quarters (house rent) when on duty outside of a garrison, and given one month's holiday or leave of absence every year, which vacation may be accumulated for four (practically five) years, the cumulative leave being on full pay, additional on half. During illness, or while on what we call 'sick leave' (no matter if it be for years), we are on full pay.

"At the age of 64, after thirty years' service (discretionary with the President), after forty years' service (obligatory if application be made), or when injured, mentally or physically, in the line of duty, an officer is retired on three-quarters pay; an enlisted man after serving twenty-five years.

"It is to be plainly seen that rent, fire and endowment insurance, taxes, water rates, repairs, competition, mutability of employment, ill-health, portionless old age, strike, lock-out and injunction, or most of the cares and troubles that shorten the life of the average human being, are not factors in our military lives."

New Methods in American Business.

SUCCESS is something that everybody is striving for. In America we have a paper called *Success*, and it has this to say about changes in business life: "It has become an unwritten, but none the less stringent, law, that young men shall dress well and neatly during business hours. In many of the largest banks and financial institutions none of the clerks is permitted to go coatless, and in the mercantile establishments where salesmen are employed 'loud' attire is actually discouraged.

"The old-time salesman gloried in his flamboyant cravats and shirts, his diamonds and his peculiar clothes. His capital-in-trade consisted of a flashy appearance, vulgar stories, a constitution that would stand intoxicating liquor and an unlimited amount of cheek. He did not have to know anything about the goods he sold, except in a general way. He slapped men on the back, took them out to dinner, got drunk with them and then booked their orders.

"On the contrary the modern salesman is a well-educated, neatly dressed gentleman, who knows all about the goods he sells. He is never called upon to drink, he never needs to dine out, he trades on honor and brains, and his customers are men who only admire men who know as much, or more, than they do about their business. Dress plays the most important part in the game of commerce, no less with the salesman than it does with the manufacturer, the mill man, the banker, or the financial man. They all dress to impress their fellow-men favorably."

Have the Japs Discovered Dundonald's Secret?

THE invention of Shimose, the new Japanese explosive, by the professor of that name, says the *American Inventor*, recalls the famous Dundonald invention, never made public and still supposed to be sleeping in the archives of the British War Office. This invention, the nature of which was never made public, was stated by contemporary reports to be so deadly and so inhuman in action that until driven by extremity the British war lords would not use it. Its use was proposed first during the early Napoleonic wars, and in every war since then the question as to whether or not it should be employed has been considered, but always in the negative. At least, so says the foreign press. But it is a matter of wonder whether any nation, having in its hands the means to annihilate an enemy, whether by an invention deadly, more deadly, or most deadly, would refrain from its use simply because the employment of it would mean an inhuman loss of life. It may be that such is the case, but common belief will run to the hypothesis that the Dundonald invention is a canard.

South Africa Likes American Implements.

AMERICAN agricultural implements are well liked in South Africa. Consul-General W. R. Bigham, at Cape Town, Cape Colony, has the following to say on the subject: "The inroads being made in the trade of this colony by American agricultural implements and the fact that the South African farmer recognizes their excellence and will have them if he can secure them reasonably have excited a good deal of jealousy in the minds of the British merchants here. The mere fact of a British brand on an implement or machine will not capture the farmers here. They want the best, regardless of where it is manufactured. As I do not live in an agricultural district I am not able to say to what extent the different agricultural implements could be sold, but I am told the American hand and sulky plows are very much admired by farmers in the Orange River Colony and Natal, and I am safe in saying that the only requirement to make them popular is a proper introduction. Stock must be kept on hand here."

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Characters,
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beautiful work.

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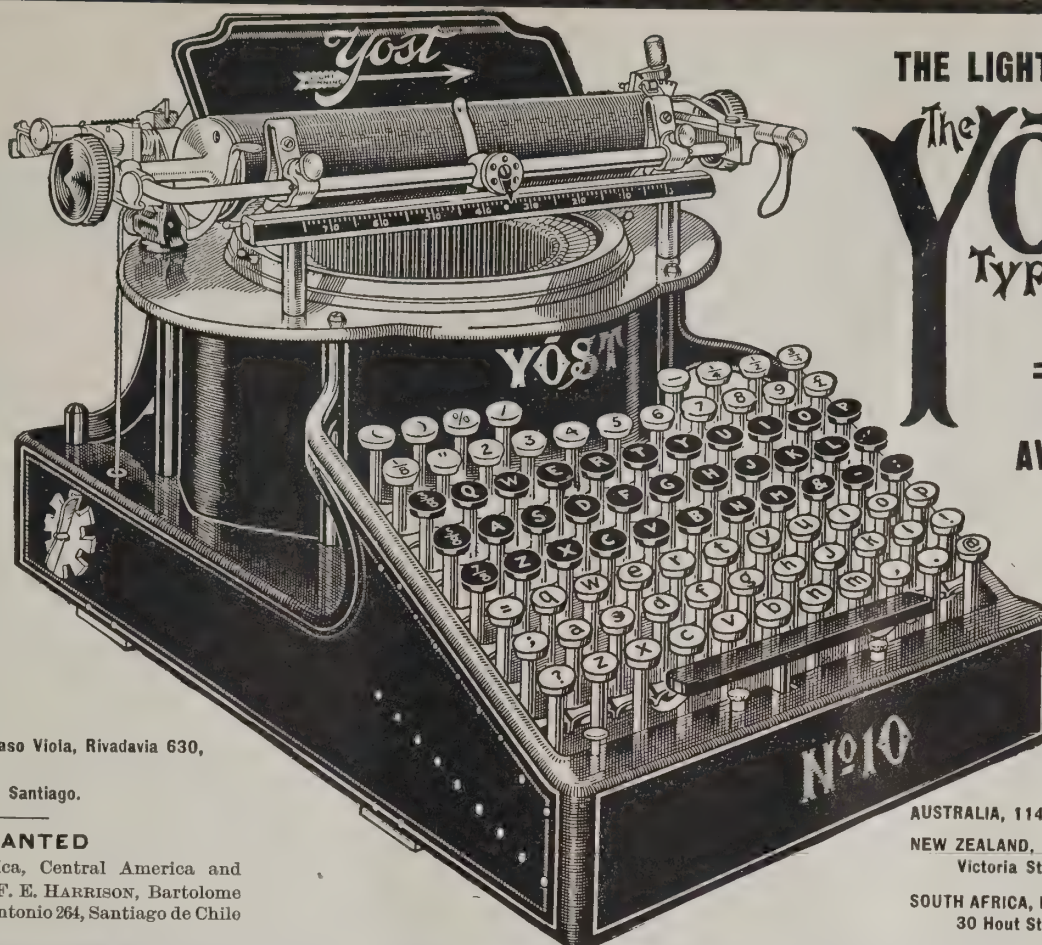
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"1900"
Ball-Bearing
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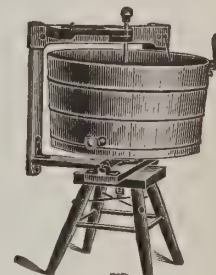
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"1900"
Ball-Bearing
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"Home" Washer.

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"1900 Junior" Washer.

A REMARKABLE RECORD!!!

Commencing in the year 1900 to manufacture the "1900" Washing Machine, we at that time
"turned out" an average of Five Washers per day. During the month of August, 1903,
we manufactured and sold OVER FOUR HUNDRED Washers per day.

A REMARKABLE RECORD!!!

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REWARD OF MERIT!!!

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-one years' practical experience
in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment**, but by the adoption of our
agitator tosses and tumbles the garment through a **whirlpool of water**, thus forcing the water through the **finest or coarsest fabrics**, causing
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SPECIAL OFFER FOR FOREIGN MARKETS ONLY:

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equivalent, we will box, ready for steamer, and deliver F. O. B. cars at New York City, **One**
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Tens of thousands of the "1900" Washing Machines have been sold in the United States, as well as in all parts of the
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Illustrated Catalogue mailed postpaid.

The "1900" WASHER COMPANY

BINGHAMTON · NEW YORK · U.S.A.

Great Congress of Electrical Engineers.

ELECTRICAL engineers from all parts of the world will come to America next month to take part in the International Electrical Congress, to be held in St. Louis, September 11th to 18th. The engineers will have opportunities to acquaint themselves with the remarkable developments of electricity on American soil.

The congress is held under the auspices of the Louisiana Purchase Exposition and will contain Government delegates, while seven American electrical bodies and several foreign societies of the same character are cooperating. The interest in this congress, which is the lineal successor to that of Paris in 1900, may be gathered from the fact that already nearly 1,800 adhesions have been received and 150 papers promised from some of the most celebrated electricians and physicists. Of this number a large proportion are Europeans, and the vanguard from the other side is expected to arrive the last week in August, when a body, about 150 strong, is to land in Boston, recruited entirely from the British Institute of Electrical Engineers.

About the same time a party of about 100 from Italy will land in New York, and from here the whole party, including many others arriving about that time, will leave for St. Louis by special trains. The party will not go directly to the congress, but will visit Schenectady, Montreal, Niagara, Buffalo and Chicago. The great electric lighting, street railway and power transmission enterprises at these American cities will be inspected and the delegates will be entertained by the respective managements.

After a week of congress work in St. Louis, from September 11th to 18th, the visitors will go to Pittsburg, and thence to Washington and Philadelphia, and while at Washington will assist officially in the dedication of the recently erected office and laboratories of the United States Bureau of Standards, at which time President Roosevelt will participate.

On the return to New York at the end of September the party will break up and proceed homeward at will; but a trip is planned to some of the interesting points in the vicinity, including the Edison laboratories. Before the party starts from New York for St. Louis it will be officially the guest of the American Institute of Electrical Engineers, and a dinner will be given at a prominent New York hotel.

Electricity Invades Manufacture of Organs.

ELECTRICITY has invaded every science and almost every art except music, which has remained under the sovereignty of the physics of air for many centuries. Now air, mighty as it is in stirring the soul to its depths by arousing the grand passions through the medium of sound, has at last succumbed. In Festival Music Hall at the World's Fair in St. Louis (U. S. A.) there is now to be seen the largest organ ever built in the world.

The instrument was designed and built at Los Angeles, in the American State of California. Fleming's patent electro-pneumatic system is utilized for producing many marvelous results. In this mighty organ there are 10,059 pipes, and from various combinations of these sounding pipes there can be produced 17,189,869,183 distinct tones.

To the visitor the first view of this remarkable instrument of sound is wonderfully impressive, since it is as large as a house, its exact measurements being 62 feet in length, 40 feet in height and 33 feet in width. With its 140 stops and 239 movements and 10,000 pipes, it will require the greatest organ virtuoso to make it respond with anything like the volubility of which it is capable.

This great organ is really composed of five separate organs, each of which forms a complete organ in itself, and these are so arranged that any or all may be instantly brought into action. These different portions have been named, respectively, the grand organ, choir organ, swell organ, solo organ and, last and most wonderful of all, the echo organ. Of the 10,000-odd pipes over a thousand are utilized for the sole purpose of imitating stringed instruments, and to make these give forth the proper sound the pipes are made of pure tin.

The electrical equipment for operating, controlling and actuating all the complex mechanism involved in this instrument includes two 10-horse-power motors for working the bellows and a special motor of 1½ horse-power for driving the bellows of the echo organ. The electro-pneumatic system of the organ contains 1,300 magnets for manipulating the key and draw-stop actions. In these magnets 130 miles of wire was used. There are five automatic electric swell engines for actuating the swell shutters, and there are more than 7,000 electric circuits controlling the varied mechanical devices.

Advances Made in Manufacturing Motors.

SO general has the use of machinery become in the last decade and so diverse are the uses to which mechanical devices are now applied in America, both for home and export trade, that manufacturers are prepared at short notice to supply large or small machines for any required purpose. Methods of applying power for driving the machines have kept up a corresponding pace with the machines themselves, so that it is now possible to purchase motors from one horse-power up. These may be electric, gasoline, hot air or steam. If the conditions are such that electricity can be had without interruption electric power is without doubt the most convenient, but otherwise the gasoline engine possesses the advantages of being the cheapest and easiest to care for, and calls for no special skill to control. Steam, while

reliable and cheap, requires special knowledge to run, and is the most expensive at the outset, but as all can be had of low horse-power it makes it possible to fit up a small plant at a light expense, and as machines are constructed for general lines of work a few hundred dollars would be sufficient capital for fitting out a small factory. In times past, when machines and power were more expensive than now, the cost was so great that unless the machines were kept running all the working hours they could not be run without loss. The one advantage that electricity has over all other power is that a small motor can be installed at any machine, and when that is not running there is no cost, whereas with fuel machines the power must be kept up all the time that the running of any one machine is necessary. This advantage has caused the use of electricity in many plants where numerous machines are used.

Ingenious Engineering Feat in a New York Tunnel.

AN ingenious piece of engineering work, the double tunnel under the Harlem River, through which the rapid-transit trains of New York's new subway will pass, is almost completed and soon will be available for traffic. Of the twin tubes' total length of 1,500 feet, a distance of 692 feet runs directly under the bed of the river. This section has been constructed on a novel plan calculated to do away with the dangers and delays and other manifold inconveniences inseparable from work carried on beneath the water.

The tunnel consists of a pair of steel tubes which rest on a foundation of piles in the soft blue mud of the river bed 40 feet below the surface. These tubes are 16 feet in diameter, the upper halves of which are put together in segments on a pontoon raft and lowered down in lengths of 90 feet at a time. These lengths are closed at the bottom and the ends, so that they contain air. Then the arched twin tops are covered over with concrete until the top is flat. They are lowered down upon walls of tongued and grooved sheet piling, 32 feet apart, upon which they fit accurately.

Mr. Naylor, the engineer in charge of the work, in a recent interview thus explained the methods by which accurate work so far beneath the surface was insured: "The piles," he said, "are long timbers, each 12 by 12 inches. Their ends are driven 6 feet below the plane on which the bottoms of the tunnels will rest. The tops of the piles are cut off on the spring line by the sawing-machine on the working platforms. The tracks on which this machine traveled were given the exact pitch or grade of the tunnel, and then by preserving the same reach of the saw shaft the circular saw was made to cut the piling exactly on the spring line of the tunnel. When the tunnel tops rest on the walls we bolt them fast and then dig out the mud from under the semi-circular roof thus provided. We next assemble and rivet together the segments that form the lower half of the tunnels."

Railroads Have the Progressive Spirit.

RAILWAY progress in the United States comes now to be marked by decades. It may seem to be a surprising fact that the great industrial progress of the country within the past ten years has made necessary the rebuilding of practically every trunk line of railroad within that time, but it is, nevertheless, true.

"Most of the equipment of a decade ago," said H. L. Stone, writing in the *World's Work*, "is now in the scrap heap." This replacing of the old equipment has been made necessary by heavier locomotives to pull heavier loads, heavier rails to bear the heavier weight, and heavier bridges.

One locomotive now does the work which years ago was done by three. In 1892 the average weight of a passenger locomotive with the tender was 75 tons; the latest type for the same service weighs only 8 tons less than twice as much. The famous "999" shown at the Chicago Fair by the New York Central, and regarded as the wonder of the railroad world, weighed 102 tons, but the big fellows of this year that pull the passengers weigh 150 tons.

Passenger trains at present of sixteen cars are not rare, nor are freight trains of eighty cars. On short trips 100 freight cars are not regarded as too much. The latest type of compound freight engine weighs 181½ tons and will haul 8,000,000 pounds of freight.

London Tests American Divining Rod.—The apotheosis of the divining rod of the ancients is found in the invention of an American, recently tested in London. His device consists of a means for sending electric currents through the soil and connecting the wires with a telephone receiver. Making and breaking the circuit causes a tapping in the receiver and the variations of the sound of this tapping are said to be directly dependent on the amount of mineral or metal in the earth through which the electric currents pass. The invention is owned by a company which expects to make a great deal of money by locating mineral beds without digging for them until the instrument has located the metals.—*American Inventor*.

America's Rivalry of Europe.—The *Berlin National Zeitung* says: "America is becoming a keener rival of Europe every year. When the Panama Canal is opened the field of battle will be in South America and Eastern Asia. There the interests of Germany and Great Britain are seriously threatened in an equal degree, and both countries will therefore be dependent upon one another in future possibilities."

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AYVAD'S WATER-WINGS

Price, 35c. each; \$2.50 per doz. for the trade only. Send \$5.00 and we will forward 2 doz. for trial. Every export house handles these goods now. It is a pocket life preserver and can be easily adjusted. A person weighing from 50 to 250 pounds can float on these wings. They are a great help to persons desirous of learning how to swim. Weight, 8 ounces. Ayvad Mfg. Co., Hoboken, N. J., U. S. A.



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CUT,
PLANT,
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Aspinwall Potato Machines

Make Large Profits Easy by Economizing in Time, Labor and Money.

We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

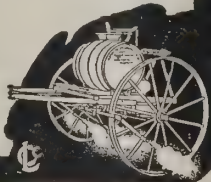
With Our Machines seed is quickly cut to best advantage. Planting, fertilizing and covering are accomplished at any depth and width of row desired. Spraying is effectively done for bugs and blight. Digging and sorting are made pleasant and agreeable work by our time and labor saving machines.

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ASPINWALL POTATO

Planters, Cutters, Sprayers, Diggers and Sorters made by us, mailed postpaid.

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PRESIDENT SUSPENDERS

Known everywhere for their comfort, style and service. Made in four weights; hundreds of different patterns.—Absolutely guaranteed—Genuine has "President" on buckles.

BALL-BEARING GARTERS

Swing like a pendulum with the motion of the leg. Lay flat; no binding; fit every leg perfectly. Easily adjusted. No stitching. Extra long adjustment.

Finest web, in many colors and patterns; packed in handsome boxes, 12 to carton. Handsome counter show-case with 3 dozen. PRESIDENT SUSPENDERS, \$4.37½ per doz., for all models except "Extra Fine," which are \$7.10 per doz.

BALL-BEARING GARTERS, per doz., \$1.95.

Terms, net spot cash, f. o. b. New York.

Liberal Discount on above prices in Quantity lots.

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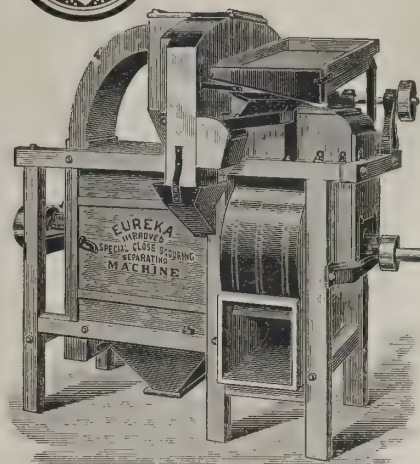
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Manufacturers of

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Grain Cleaning Machinery,

Seed Cleaners, Flour, Bran and Feed Packers, Cement and Plaster Packers, Coffee Roasters, (Gas, Coal and Coke) Coffee Cleaners and Polishers, Coffee Hullers, Rice Hullers, Graders, Separators and Cleaners. Special Machinery for Flour Mills, Grain Elevators and Warehouses, Cement Mills, Rice Mills, Coffee and Spice Mills.

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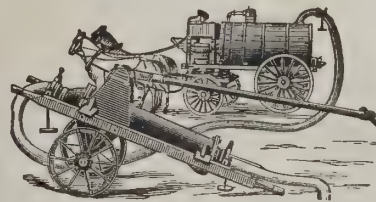


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THE EUREKA WORKS,

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First of all, get this book. No matter what other makers you write for a catalogue, write us, too. We will send you the best book of all—written by the man who has devoted 22 years in perfecting RACINE HOT-WATER INCUBATORS AND BROODERS. When you learn what he knows you will want his machine, we think. The book is our illustrated catalogue—that is why we send it free. But it is more than a catalogue. It tells all that an incubator should be and why. Write to-day for it. Reliable representatives wanted. Prices quoted for export admit of big profits. Address

Racine Hatcher Co., Box 217, Racine, Wis., U. S. A.

The Handy Fruit and Vegetable Slicer

The most interesting kitchen utensil ever invented. It slices every kind of fruit or vegetable into an infinite variety of unique and fancy designs, making an entirely new, novel and delicious product.

Is invaluable for making delicate salads, garnishings, etc. Makes Juliennes ten times as fast as by the ordinary method and is the only utensil that will produce Lattice Potatoes. Is extremely simple to operate and sells rapidly wherever shown.

\$16.50 Upon receipt of SIXTEEN and 50-100 DOLLARS
\$100 in U. S. Gold or its equivalent, we will deliver boxed, ready for steamer, F. O. B. cars New York, one gross [144]
No. 6 X SLICERS, for Export only. Weight boxed, 120 lbs.

NOTE.—To facilitate our rapidly increasing export trade we desire to arrange with one responsible business house in each trade center of the world, to handle our NO. 6 X SLICERS and other specialties manufactured by us.

HANDY THINGS CO.,

Manufacturers,

LUDINGTON, 40 to 50 Rowe Street, MICHIGAN, U. S. A.



JULIENNES

LATTICE POTATOES

Some Queer Facts About Ocean Cables.

EVERAL thousand men are constantly engaged in cable work—laying, making, repairing, operating. An English newspaper once spent \$1,600 for a cable account of an Australian cricket match. The London *Times* correspondent in Melbourne during a famous murder trial far exceeded his toll limit of \$1,000 per day.

Cablegrams from Manila during the Spanish-American war and from Martinique after the eruption of Mont Pelée cost the New York papers many thousands of dollars a day.

Cables are broken by whales, by submarine explosions, by dragging anchors.

Once an Atlantic cable was wilfully cut, and once \$250,000 was expended on a single repair job.

To keep London and New York brokers in communication involves the exclusive use of a \$3,000,000 cable and a system of land line costing about \$250,000 per annum, ten sets of costly cable apparatus and a highly trained staff of 100 experts.

One cable operator traveled in ten years 60,000 miles and worked in a dozen countries. Operators think nothing of a jump from London to Chili. Most cable offices are in healthy, pleasant places. But Santos, Brazil, and the West Coast towns of Africa are deadly. In some of the latter colored operators alone can endure the climate.

Ciphers and "codes" multiply an operator's perplexities. Some ciphers compiled by a writer in the London *Empire* follow. An ambassador's:

BRITISH AMBASSADOR, CONSTANTINOPLE.			
39614	53481	08359	60017
49620	20395	98201	88563

SECRETARY.

The Turkish diplomatists, who enjoy the reputation of being the wildest negotiators in Europe, communicate telegraphically in the following cryptogrammic jumble:

OTTOMAN, LONDON.
xw3rbsly12zdps39ukw25jdz17gd21w8ff

AHMED.

The Chinese and Japanese have a series of pretty little brain-twisters in the shape of squares, triangular, and even round, codes. Of course, they also use cipher, as in this Chinese puzzle:

KWONG CHANG, WASHINGTON.				
h2fk	13oq	2d5z	j7kx	dh2k
c4wd	x3zk	iz3g	a3si	wp4z

WUN LUNG.

One of the queerest messages ever sent was cabled by a facetious Yankee with a fat pocket book who had witnessed a royal departure from London. It ran:

"Victoria left for the Continent to-day. She took with her forty-seven traveling trunks, one bed, two mattresses, one donkey, one princess, one nigger attendant, one Scotch Highlander, six white servants of divers sexes, one Cabinet Minister, three boxes despatches and books, four dogs, two cats and one chaplain!"

A number of specialists have developed who are called "packers," and whose business it is to take cable messages and reduce them to one-word ciphers. The cable companies charge double for words of more than ten letters. But the "packers" do not much mind the limit with eight languages to draw upon.

Press despatches are not codified, but are usually skeletonized. Such a hodge-podge as this:

"Parisian 29 x.—Disgaoth Swa Kim stags abysmins agan attached Bakalch forge 50000, men repulse engrmous losses. No farther dytails cattle gwen hispotch"—

is translated into the following intelligible paragraph:

"PARIS, Jan. 29.—A despatch from Suakin states that the Abyssinians have again attacked Makaleh with a force of 50,000 men. They were repulsed with enormous losses. No further details of the battle are given in the despatch."

This is an actual instance, but despatches are seldom quite so badly "mixed up."

American and European Trade Characteristics.

A WRITER in the *Engineering Magazine* makes these observations, which are interesting, whether we agree with his views or not: "The

European is not generally an expert in creating a market or demand for new things, but he thoroughly understands the necessity of meeting the requirements of every existing market and all the peculiarities incident thereto, and he constantly does it most admirably.

"The American is expert in introducing new things and creating a demand therefor, as is evidenced by his success with sewing-machines, typewriters, popular cameras, agricultural machinery, etc., abroad; but, despite the fact that, as stated, he has at command the personnel, manufacturing methods and natural resources to best meet the requirements and peculiarities of any market, he is usually inclined to the theory that American practice is right in everything, and that the foreigner can easily be convinced thereof, and he hesitates to furnish exactly what may be required by the foreigner, or to supply it in the manner in which it may be desired. He is surprised that the for-

eigner is seemingly obstinate in his theories, and forgets that it comes through traditions and familiarity with some certain practice, or that, as is frequently the case, local conditions actually necessitate something at variance with ordinary American practice.

"European industrial methods, laid out to meet the requirements of international trade, have hampered standardization, but have developed methods for the economical production of special work. American methods have produced the perfection of standardization, but have operated against the most economical production of special work. A happy combination of economical production on both these classes of work would, of course, be the ideal condition. Owing to his natural versatility and his possession of the elements which he has at his command it is but natural to conclude that the American will reach this ideal condition when he is forced to do it through the necessities of trade."

Big American Fresh Water Ship's New Features.

SEPARATING the United States and the Dominion of Canada is a chain of great lakes, of which little is heard outside of the North American continent. An extensive commerce is carried on by means of the vessels plying the waters of these lakes, and some of the steamboats measure up to the standard of the second-class ocean liners. As showing the development of this branch of American effort it is worth noting that a new steamboat, 60 feet larger than any now in use in this traffic, is being built for the great lake trade. Heretofore boats 500 feet long have been considered ample. The building of the new boat marks a revolution in lake commerce, for it was supposed the maximum in the size of lake vessels had been reached in the 500-foot boats.

The new vessel will have a beam of 56 feet, a depth of 32 feet; her keel measures 540 feet, and she is to have 32 hatches. The engines will be of the quadruple expansion type. The total cost is estimated at about \$500,000, and of this amount it is said that about \$150,000 will be paid out in wages. The building of such large ships necessitated the extending of one of the regular berths at the yards about seventy-five feet.

The construction of the steamer is perhaps as remarkable as her length. Nothing like it has before been attempted on fresh water. The interior of the hull will represent a tunnel more than anything else. There will be no bulkheads or freight compartments as in other boats, but the whole hold—the freight-carrying room—will be one vast compartment. The arches which support the main deck, it is said, will strengthen the boat more than would bulkheads and special braces. It is figured that the new ship will carry 10,000 gross tons of cargo with an 18½ foot draft.

The arrangement of the hatches is to be such that the unloading of ore or wheat may be done with the utmost dispatch. With this end in view, not only the hatches but the bottom of the boat as well come in for improvements. The latter will be a hopper bottom, so that the cargo can be reached with the clam-shells or buckets without delay.

Eggs in America Handled as Safely as Iron.

WHILE eggs are extremely fragile things, they are handled in the American trade with almost as much safety as pig iron or pine lumber. "You would be surprised to learn how few eggs are broken in handling," remarked a New York commission merchant the other day. "As a matter of fact, the breakage of eggs in transit and in handling is extremely small, really next to nothing. The commercial egg package almost universally used throughout the country at the present time is a case containing thirty dozen. There were received in New York last year 2,869,269 cases of eggs. Multiply that by 360, the number of eggs to a case, if you care to know the total number of eggs.

"Packed in cases eggs run about four hundred cases to the car, so that the eggs brought to New York last year made upward of 7,000 carloads, equal to 140-odd solid trains of eggs of fifty cars each. Are there solid, or exclusive, egg trains? Not many, but this for the reason that the eggs are gathered originally from many and widely scattered points, but solid cars of eggs and bunches of cars are common, frequent, every-day shipments. And, packed as they are nowadays, eggs for this market come from everywhere, pounding over a thousand, fifteen hundred, two thousand miles of railroad from as far north and west as North Dakota, and from as far south and west as Texas, with scarcely any breakage worth mentioning.

"If anything does happen to eggs in transit or handling it is likely to be in the nature of an accident such as might happen to anything. For instance, a case of eggs might work out from under the rope around a truck load, or a case of eggs might fall out of a wagon, or an axle might break and let a load of eggs drop. In fact, eggs are carried on American railroads with practically no more chance of breakage than less fragile commodities."

All of which shows what Americans have been doing in the transportation line in recent years, as well as in other spheres of activity.

Largest Gas Company in the World.—There is a natural gas company in the American State of Pennsylvania which supplies 64,365 consumers and furnishes 40,000,000 cubic feet of gas to its customers. In the last year it gained more than 25,000 consumers, and its earnings increased nearly 100 per cent. Much of the gas is supplied to industrial concerns. Who may now say that the American section is not much more than holding its own in the world's progress?

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

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List, \$2.65



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 3/4 cubic feet. This cut represents the **entire line** of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/4 inches deep and 32 1/2 inches long. Made of selected quarter-sawn oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is **SMALL**. All parts are **INTERCHANGEABLE**, making every possible size bookcase from the same stock. They require but little space in warehouses, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in **PERFECT CONDITION**, as no possible damage can occur to **FINISH AND NONE OF THE PARTS CAN SWELL OR WARP**, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



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List, \$3.00

9 1/4" Section
List, \$4.15

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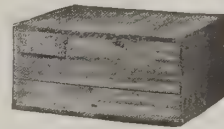
11 1/4" Section
List, \$4.50

11 1/4" Section
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11 1/4" Section
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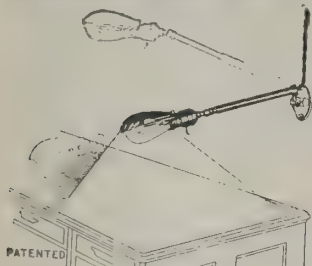
Base Section
List, \$2.65



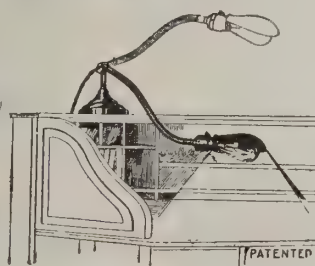
SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warehouses and on shipboard.

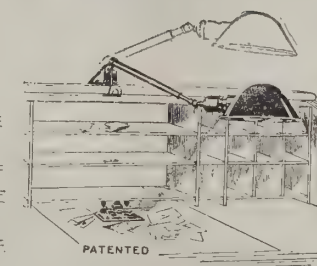
ELECTRIC LIGHT FIXTURES



Style No. 40.



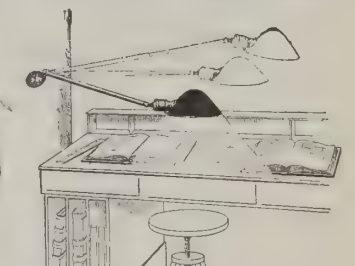
Style No. 50.



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Style No. 1.



Style No. 290.

By the use of the fixtures illustrated above the electric light can be adjusted to any conceivable position. The arm is telescopic and extendable, and is mounted on a ball-bearing friction joint. They are without question the most adjustable, practical and durable fixtures on the market.

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White Enamel Refrigerator Co.,

ST. PAUL, MINN., U. S. A.

Owners and Manufacturers of

Bohn's Patent Dry Air Syphon System of White Enameled Refrigerators.

The Bohn Dry Air Syphon System insures a low and uniform temperature, ranging from 38 to 45 degrees Fahrenheit. With our Enamel Lining, you need only to wipe the food compartments with a damp cloth to clean perfectly. The only absolutely sanitary refrigerator made.

Adopted and used exclusively by the Pullman Company for all of their Dining and Buffet Cars. Pennsylvania Lines, New York Central, Michigan Southern, Union Pacific, Canadian Pacific and all other railways throughout "the States" and Canada, as well as by thousands of homes, hotels and clubs.

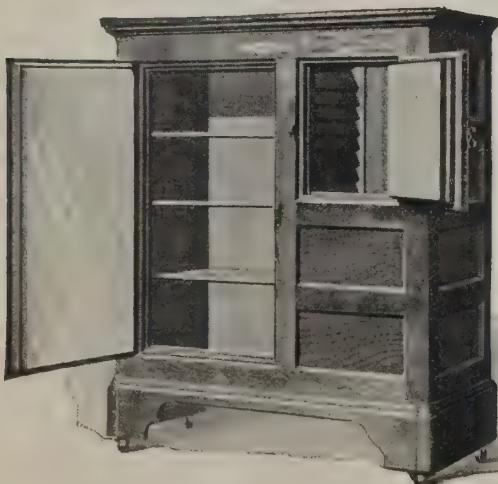
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No. 2. Style "A." Panel Door. Price, \$23.00. Outside measurements (inches): Width, 38; depth, 21; height, 44. Weight, boxed, 278 pounds.
No. 3 1/4. Style "D." Panel Doors. Price, \$32.00. Outside measurements (inches): Width, 38; depth, 21; height, 55; weight boxed, 360 pounds.

NOTE.—Orders received direct, or through export commission houses. When ordering through the latter, to avoid errors, please mail us a duplicate of order.

Our forty-page catalogue, illustrating and describing the various styles of White Enamel Refrigerators made by us, mailed postpaid.



No. 2. Style "A." Panel Door.



No. 3 1/4. Style "D." Panel Doors.

Marvels of Modern Steamships.

PASSENGER steamships which ply the big oceans have been improving right along. These ships are only collateral instruments in the work of advancing the volume of international trade, but they are none the less interesting. The *New York Herald* in a recent issue devoted an entire page to this subject, and some extracts will be found of general interest, even to merchants and others who have traveled on the liners. The *Herald* says:

"A modern ocean liner is commonly said to have all the comforts of home. The comparison is extremely unfair, however, to the liner, unless the home in question be that of a millionaire and of a man of taste and advanced ideas in the bargain. A great ocean steamer is absolutely self-contained. For completeness in providing every comfort and luxury no hotel, clubhouse or private residence in the world can stand comparison. A great liner is actually an iron continent, where perhaps 3,000 or 4,000 people assembled from every grade of society may live for a month, if necessary, and enjoy more than the comforts of home.

"A modern liner is such a hive for activity and so much is crowded beneath a single roof, or rather deck, that few ocean travelers ever come to know these floating palaces really well. The mechanism which enables the population of a small city to live at sea without any interruption of the daily routine of land life is extremely complex. From the time in the early morning, when the passenger may telephone from his stateroom to a fellow-passenger or to order a special dish for his breakfast, throughout the day, with its newspaper, its concerts and all the hundred opportunities for passing the time pleasantly, to the concert, ball or card party at night, with afterward a possible theater supper in the grill-room or Vienna café, the great boat would seem to leave nothing to be desired.

"How many of all the thousands who have crossed on the great liners have ever been inside the ship's printing-office? It is a picturesque little shop, fitted up much the same as any printing-office on land, with type cases and printing press, where the click of the familiar machinery comes as a welcome interruption to the incessant throbbing of the ship's engines. In the past year the ship's printing-office has gained a new interest. It has become a newspaper office as well. For years the great liners have been equipped with a small printing press for printing the ships' menus. The work required formerly but a few pounds of type, and this of one kind. The installation of the wireless system has given a new occupation to the printer. On the steamers of the Hamburg-American line, for instance, a newspaper is published every day.

"Within the last few days a new record of oceanic newspaper enterprise has been recorded. Ocean voyagers have not only been served daily with newspapers, but newspaper extras have been issued and called out, at least distributed, throughout the ship on the receipt of important news. There are at present upward of fifty steamers equipped with the wireless telegraph apparatus, plying backward and forward in the narrow ocean lanes. It is common for a steamer to be in communication with some other boat each day, and so the possibilities of picking up news from one side of the Atlantic or the other are many. The steward editor is seldom at a loss for some news items from the outside world, at worst not more than three days old.

"The ship's printing-office is usually an inside room and of the size of an ordinary stateroom, with the berths removed. The stands of type in these days of ocean newspapers pretty well fill the little office. The press is the same as used for printing the menus. The newspaper is the same size as these cards, or 8 by 4 inches. The press is worked by hand. The ship's printer is a regular steward, and, like them, wears the ship's uniform. He must, besides, have some qualifications which a landsman may never learn. He must be a good sailor. It is not enough that he should never be sick when a menu or a Marconi newspaper edition is to be run off. He must be able to work quickly with his office at an angle of perhaps forty-five degrees. The ship's printing-office is well worth a visit, especially when time hangs rather heavily on one's hands. The best time to see the office, it may be suggested, is in very rough weather.

"The great liners of to-day are equipped with a complicated system of electric communication, forming as it were a great nervous system, which serves to bring every part of the great fabric in touch. There are telephones which enable a passenger to call up a stateroom from the smoking-room, the café or the grill-room, or communicate with the captain, the purser or the stewards. The wheelhouse again is in touch by telephone with every part of the ship, so that the man at the wheel can communicate with the engineer with the least possible delay. There are besides electric signals to warn the bridge in case of fire, or for use in closing the compartments automatically in case of accident. Even an electric elevator is contemplated for the ships of the future.

"One of the least familiar and yet most interesting provisions of a great liner is its strong-room. Innumerable romances have been written in the past of ancient treasure ships of various kinds, and much tragic history has been made by them for centuries. As a matter of fact, many an ocean liner sails out of New York harbor with greater treasures aboard than did any of the Spanish treasure ships whose names have been famous for centuries. From time to time, a brief paragraph in the newspapers announces that so many millions in gold or silver left by such and such a steamer, and that is all. Few ocean voyagers, even veterans, have ever seen these strong-rooms. The great modern liners are as well equipped in this respect as most banks.

"In addition to this great deposit vault the ship is supplied with several heavy steel safes for the accommodation of the purser and the passengers. As in

any hotel, the steamship company is not responsible for valuables of any kind left in the stateroom. The passengers are free, however, to deposit articles of value in the ship's safes. The purser again usually carries a considerable sum of money, sometimes many thousands of dollars, and this, with the ship's papers, is carefully guarded. The smaller safes are often built into the walls of the purser's cabin. In the newest of the ships a great desk has been installed, exactly as in a hotel, and this again is never without its safe.

"The desk or office of the newest ships is itself a very novel feature which contributes much to the illusion that it is a hotel. It is placed at or near the main companionway. A long desk runs nearly the width of the ship, behind which the desk clerk stands smiling and obsequious, prepared to perform a score of unexpected services. The sailing list lies before him in lieu of the hotel register. There is a bell at his hand for summoning a boy to show you to your cabin or assist you in any way. Back of the desk extends long rows of pigeonholes, where you can leave the key to your room, if you choose, in the proper box. The desk is also the ship's post-office. You can mail your letters here for several hours after sailing, to be carried ashore by the pilot. The letters, which are brought aboard by the pilot or the tender at the various ports, are distributed here in the pigeonholes.

"Still another touch of luxury is the telegraph-office, installed at the desk. A bulletin announces whenever a wireless station or ship is in communication and until what hour messages may be filed. Such communication has grown to be almost continuous on the modern liners. For a day after leaving port or entering the next port of calling it is usually possible to keep in touch with land by the wireless telegraph.

"Even the pet dogs of the passengers are not neglected on the great modern liners. It is not enough that dogs should be stabled or kennelled somewhere below decks with whatever live stock may be on board. Many passengers demand that their pet dogs be treated with the dignity of passengers, with comfortable quarters above deck and in a position where they may receive daily callers. Every demand of the most exacting passenger is met on these boats, and the dog quarters are, therefore, irreproachable for comfort and location. Incidentally, a regular passage rate is demanded, and the requirements are seriously printed in the literature of the companies. The rate varies from \$10 to \$20, according to the steamer. On a five-day boat, for example, a higher rate is naturally charged than on a slow boat.

"The dogs' cabins usually consist of a number of commodious kennels placed on the boat deck. These kennels are, as a rule, large and strongly built, so that in the event of a chance wave striking them they are not likely to be broken. The kennels in the winter months are usually kept in the after wheelhouse, which is carefully warmed. In fair weather they are grouped picturesquely about the upper or boat deck, in the lee of the great iron ventilators or the life-boats, where they will be sheltered alike from wind and weather."

Would Double the Speed of Ocean Steamships.

AN American inventor has interested a prominent shipbuilder in a new "multiple electric propeller" which he believes will cut down the passage time of Atlantic Ocean steamships from six days to three days. While it is generally accepted that the present speed of ocean steamships cannot be much increased except at the expense of safety, the inventor's account of his discovery is given for what it is worth. The inventor is a machinist. It was while working at his trade that he evolved the idea of the multiple electric propeller. The device consists of a series of propellers arranged along the sides of a vessel, and driven at great speed by electricity. For a torpedo-boat destroyer the size of those at present in use in the United States Navy twelve propellers would be necessary, six on each side. In addition, single or twin screws could be provided, be operated alone or jointly with the side propellers.

"One hundred and fifty revolutions a minute is the limit of steam power, while my electric reversible motors can make 1,500 revolutions a minute," he said. "The power is transmitted by electric wires direct to motors built on propeller shafts. No belting or coupling is required, and the machinery is simplicity itself. I claim that there is practically no limit to the speed of the screw under this system. The only noise on the new vessel will be similar to that made by a flywheel in motion. Another advantage is that the terrific heat from furnaces and steam pipes will be avoided.

"A distinct feature is that the screws extend from stem to stern and thereby tend to maintain an equilibrium that will materially diminish the pitching and rolling motion of the vessel. The long shaft being disposed of, there will be no thumping and no jar will be felt from the horizontal motion. The most efficient turbine engine in the world will be used, which means a great saving in weight of machinery and in space now occupied by coal. Steamship propulsion now consumes 3,000 tons of coal, at a cost of \$18,000, a trip to Southampton. The electrical ship will reduce the coal consumption to 1,500 tons, being a saving of \$9,000 on each trip."

Cost of American Strikes.—In the last twenty years strikes have cost the wage-workers of the United States 3 cents a month. The average employer has one strike every thirty years, and the average strike lasts twenty-three days. Some unions have had no strikes for twenty years or more. It is said to be a rule that the strongest unions have the fewest strikes. A writer in the *Car Worker* says: "It is not fair to discuss strikes from the standpoint of an ideal society. In an ideal society there would be no strikes, no law courts, no trusts, no industrial warfare of any kind."

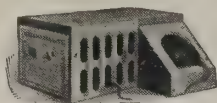
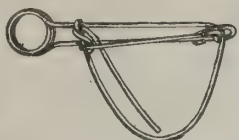
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Particular attention given to export orders. Illustrated catalogue free, giving full particulars. Order through your Exporter.

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Mouse and Rat Trap,
also Imitations.**"Catch-Em-Alive"**
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4 sizes.
For catching small fur-
bearing animals.**Cokes'**
Self-Setting Wood
Choker Mouse Trap.
1, 2 and 3 Hole, Square.
4, 5 and 6 Hole, Round.**Cokes'**
5-Hole Metal Mouse Trap.
Extra heavy.
Well made.**Pennsylvania**
Rat Trap.**LITTLE'S SATIN-FINISH CARBON.**

LITTLE'S CARBONS will not dry out under any ordinary circumstances, in any climate. No Carbon made under any other process than **Little's** can give this guaranty, and there can be no imitation of **Little's** process in carbon making; attempts to steal it have resulted in permanent injunction; and contempt of Court is an untried way to business success.

Little's famous brands, "Cobweb" and "Satin Finish," are known and used all over the world.

Little's Carbon Papers are better than all others because: They do not smut. Impressions from them in many instances can hardly be told from those made by a ribbon. They are not sticky or greasy, yet they do not dry out and do not spoil with age, or in any climate. They last longer than any others. The color is denser, stronger, more permanent than any other. It is evenly spread by automatic machinery.

Most other Carbon Papers look alike. **Little's** looks different. It is different, being made differently by a special process, and it does different work. Send for Catalogue.

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Standard Typewriter Supplies,**Rochester, N. Y., U. S. A.**

ESTABLISHED 1846.

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Brattleboro, Vermont, U. S. A.

Cable Address: "Estey," Brattleboro, U. S. A.

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Over three hundred and fifty thousand (350,000) in use throughout the civilized world.

The **Estey Reed and Pipe Organs** are specifically made for use in churches, chapels, music and lecture halls, Masonic lodges, schools and residences.

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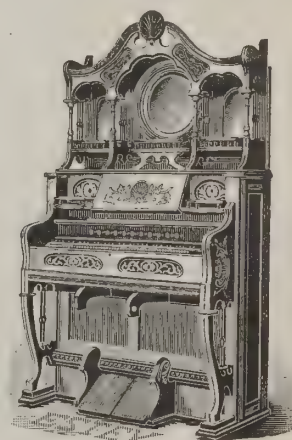
Our Catalogue, illustrating and describing the various styles of Organs and Pianos made by us, mailed postpaid to all parts of the world.

None but the most skilled workmen and the best of material are employed in the making of the **Estey Organs and Pianos**. Prices quoted F. O. B. cars at New York City. Specify "Estey," and when ordering, to avoid errors, please mail us a duplicate of order.

NOTE.—To facilitate the handling of our export trade we desire to communicate with one responsible musical instrument dealer in each trade center of the world.

**ESTEY PIANO. Style 20.**

Made in mahogany, oak and American walnut. $7\frac{1}{2}$ octaves, scale A to C. Height, 4 feet 3 inches; Length, 5 feet; Depth, 2 feet 3 inches; Weight, boxed, 850 pounds.

**ESTEY ORGAN. Style "S."**

Solid walnut or oak case. Height, 6 feet 8 inches; Breadth, 3 feet 10 inches; Depth, 1 foot 11 inches; Weight, boxed, 400 pounds.

HAVE YOU SEEN THE

Schroeder Rotary Washer?

It is the most perfect and successful Rotary Washer on the market. The tub is made of red Louisiana cypress, which will not fall apart. All castings are finished with rust-proof aluminum paint; all iron parts coming in contact with the clothes are heavily galvanized. We also make other washers. For particulars address

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HIGH STANDARD BRASS GOODS

For Engine Builders, Gas and Steam Fitters.

WRITE FOR CATALOGUE.

AMERICAN HARVESTING.

Forty-Two Binders Working Simultaneously on One of Our Big Wheat Ranches.

SOME idea of the progress that is being made in America in the cultivation of the soil and the use of agricultural machinery can be gathered from the following interesting letter which is sent to us by a correspondent at Kansas City, which is close to the center of the American wheat-growing district:

"Harvest is just ending on the famous 101 ranch and the first carload of new wheat has been received in Kansas City. It came direct from the threshing-machine at Bliss, Okla. This year the Miller brothers, owners of the ranch, have harvested about 9,000 acres of wheat, the greatest number of acres of wheat that have been harvested in Oklahoma upon any one farm.

"The total number of acres of land cultivated on the 101 ranch is something more than 12,000, with wheat as the principal product. The entire ranch, including pastures, contains 70,000 acres. Of this vast tract the Miller boys own 4,300 acres, having purchased it from the Indians of the Ponca tribe. The balance they have leased from the tribe for a yearly rental.

"Their wheat yielded better this year than they expected, considering the adverse conditions of the winter and early spring. The average yield of the 9,000 acres will be about twenty bushels to the acre—perhaps a little less. Some varieties will show as high as thirty-five bushels to the acre, while some will only run about ten. The White Wonder wheat, a variety that was produced first by this ranch, seems to be showing the best results.

"For the last two weeks, or since harvest began, the ranch has been about the busiest place in Oklahoma. To handle this crop, forty-two binders were required and not fewer than 300 men to work the machines and put the wheat in the shock. Three hundred mules were necessary to pull the binders and the supply wagons and do all the hauling for the outfit.

"The Millers hired every man that appeared and wanted a job. Almost any kind of help could find something to do. The wages paid to the infantry, as the Millers call the men who shock the grain, was \$1.50 a day, with board and a place to sleep. To take care of the men, extra cooks were hired, and the ranch butcher killed a beef each day to furnish fresh meat for the workers.

"The wheat fields of the ranch are scattered all along the Atchison, Topeka and Santa Fé from two miles south of Ponca City to below Red Rock. The Millers have been very fortunate, the weather holding good for them during harvest, and their force of binders and men have taken care of about seven hundred acres of wheat each day they worked. The two largest fields on the ranch contain 3,000 acres each. One of these is seven miles around, and twenty-two binders were at work in it at one time.

"While this force of men has been busy with the harvesting of the wheat another force has been cultivating the corn. The ranch has only one corn patch and it contains more than a thousand acres. June 20th the corn was waist high and was receiving its last cultivation. Another force of men was put at work the next week making ready to thresh out the wheat. Five threshing-machines were put in the field to handle the crop. Twelve new wagons were ready to be put to work as needed, hauling the wheat to the cars.

"The 2,500 acres of land not taken up with wheat and corn will raise oats, cane, Kaffir corn and small products. One feature of the farm this year is a fifty-acre watermelon patch. This is about the amount the boys plant each year, and it supplies all the country round. No one else makes any pretense to plant melons, because they know they can have all they want by going over to the Miller patch. This patch will supply the whole Ponca tribe and any whites who want to gather the melons. There is no local market for melons, and that, together with the fact that it is easier to let the Millers plant them, cuts down the acreage.

"The expense account of the 101 ranch last year ran to more than \$60,000. The profits were large, although it is impossible to tell just what they were, on account of the new land bought, stock added and open accounts with dealers at the present time. The operations of this farm are reduced to a system. J. C. Miller is the farmer and looks after all the farm work, deciding what will be raised and attending to all the details of the work. George L. Miller handles all the accounts, looks after the commissary department, attends to the correspondence and makes himself generally useful in all the dealings with the Indians. Zach Miller is in full charge of the stock department and looks after the buying and selling of cattle, horses and mules. He spent some time when he was young at a military school, and defines his position as being 'in command of the cavalry.'

Satisfaction of Americans in Work.—President Charles W. Eliot, of Harvard College, in *World's Work*, says that any occupation that combines avoidable risks with uncertain productiveness has in it two large elements of interest, and, therefore, of possible satisfaction. Thus, the miner's occupation, in which it is uncertain how much coal or ore a given expenditure of labor in drilling and blasting will produce, has two elements of satisfaction. Every trading operation has in it the interest of adventure. Finally, those occupations which, like the building trades, present from day to day, or from year to year, new materials, processes, designs and products—and, in these days, what occupation does not offer many elements of novelty?—give to the life of the workman the interest of variety, with new things always to learn. The

higher employments in America all offer a large variety from year to year, and even from week to week; but the lower employments, too, offer to ambitious and alert workmen a large variety of mental and bodily occupation. A middle-aged printer lately said to a friend of mine: "I have been thirty-five years in a printing-office, and still I learn something new about printing every day." Indeed, it has been characteristic of the last thirty years that all the main industries have been made over, root and branch.

Students from Other Countries in America.

EVERY quarter of the globe is represented among the students taking the summer courses at Columbia University, of New York, and two of the most interesting men who have just entered are from Asia and Africa, respectively. The Asiatic is Srirangan Desikachar Sheshadry Iyrngar, an East Indian, who has been sent to this country by his government to obtain an electrical education.

The African has been in this country six years and expects to make his home here, his selected life-work being the instruction of others of his race. He was born at Ananaby, on the Gold Coast, twenty-nine years ago, and his family are wealthy, having accumulated a fortune in the ivory trade. His full name is James Euman Kodwo Mensa Ostiwadu Humanpunsam Kwegyir-Aggrey, but for short he answers to James Kwegyir-Aggrey. He will be the first negro to receive the Ph.D. degree from this university.

Iyrngar's patron is Krishnaraj Wadiar, the Maharajah of Mysore, a native state in southern India, containing some of the richest and most productive gold mines in the world. Last year the output of the fourteen mines, which are known as the Kolar group, was more than 500,000 ounces of gold. It is all extracted from the quartz after crushing. The student has already taken his B.A. in physics and chemistry at the Madras University, and he will be able to take the four years' Columbia course in electrical study in two years.

"The mines are leased to English capitalists, who operate them," said Iyrngar. "They pay a rental and a percentage on the output, and the income to my government from rents and royalties is many millions a year. We have a splendid electric plant there to operate all the machinery. It cost \$3,000,000, and was furnished by an American company, which is operating it now. It is to operate it until the government is ready to take charge, and that will be when I have completed my education in this country.

"Ninety-two miles away from the mines we have a waterfall 120 feet high which we call the Cauvery. We have harnessed the water as you have done at Niagara Falls, and we convey the power to the generators at the mines. Formerly it cost \$1,000 a day for coal at the various plants.

"I have been in this country about sixteen months, and most of that time I have spent in the electric company's works at Schenectady. You know when you have charge of a big electric plant you must know everything about every part of it, and I learned my lesson in each of the many departments of the shops. This summer I am taking a course at Columbia in higher mathematics, and in the fall I will begin the electrical course which I shall finish in two years and then return to take charge of the electric plant at the mines which my government will then formally take over."

Successful Maiden Trip of the Big Baltic.

SMOOTH, delightful and successful was the maiden trip of the big ocean steamship *Baltic* to New York last month. The longest, the highest and the heaviest ship ever made had cast her starboard eight-ton anchor off the lightship at 11 P. M. on July 8th.

The *Baltic* is an enlarged *Cedric*, symmetrical in lines, comfortable, if not luxurious, in appointment and steady in a seaway. The biggest of all passenger ships conveys no idea of her gigantic size when seen at a distance. Only by looking up or down her, or by comparison with other objects alongside, does one realize that the *Baltic* is nearly an eighth of a mile long, and that with double skin, holds, decks and platforms she is twelve "stories high." As the revenue cutter churned alongside, it was 64 feet from water-line to sun deck, and no marine ladder mounted on the tender's pilot-house would reach even to the main deck. A companion ladder swung down from the ship afforded the only means of boarding.

The average daily consumption of coal was only 235 tons—striking in comparison with the 700 and 600 ton a day consumption of some of the Atlantic greyhounds. To keep her forty-eight furnaces busy, only 97 hands, divided into three shifts, are employed. There are 14 engineers, 15 oilers, 36 firemen, 26 coal passers, 2 storekeepers, 2 stewards and 1 winchman. The revolutions of the twin propellers were from 78 to 80 a minute.

On every day of the trip the passengers played golf on her open sun deck. The Fourth of July was celebrated with athletic games on the promenades and an entertainment. A full description of the *Baltic* was given in *THE AMERICAN EXPORTER* several months ago.

American Goods for Africa.—Here is a sample of the cargoes that are going away from American ports. The steamship *Swazi* carried these items to Cape Town when she sailed from New York last month: Agricultural machinery, \$39,000; mining machinery, \$75,798; flour, \$17,594; twine, \$19,089; plows and materials, \$11,000; building materials, \$8,700; electrical materials, \$4,500; copper wire, \$5,000; hardware, \$8,600; manufactures of iron, \$17,000; canned meat, \$17,224; other canned goods, \$8,880; petroleum, \$34,725; lumber, \$16,200, and terra cotta, \$16,954.



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Agricultural Implements and Machinery

including **Engines and Boilers**—Vertical, Horizontal, Stationary and Portable; **Threshers**—for Wheat, Oats, Rice, Etc.; **Circular Saw Mills**; **Plows**—Steel and Cast Iron; **Cultivators**—Walking and Riding; **Harrows**; **Grain Drills**—suitable for every Country; Etc., Etc.

THE LARGEST AND BEST EQUIPPED FACTORY IN THE STATES.

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1846 — 58 YEARS — 1904

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CAPITAL, - - \$1,000,000.00.

MANUFACTURERS OF

Cotton Felt Mattresses,

MADE FROM SPECIALLY SELECTED COTTON.

The cleanliness and purity of cotton for bedding purposes as compared with hair, feathers and other filling material, often found infected, appeal to the intelligence of every householder, and as a result our COTTON FELT MATTRESSES are fast displacing all other kinds. With over 50 years' experience in the manufacture of cotton products, we have special qualifications and facilities for processing cotton for this purpose.

Our mattresses are clean, pure, elastic and soft, and also proof against vermin, germs and dust.

NOT AFFECTED BY CLIMATIC CHANGES.

THE STEARNS AND FOSTER CO., Cincinnati, Ohio, U. S. A.



THE STEARNS AND FOSTER CO.'S COTTON MILLS.

ESSEX'S STANDARD STEAM-ENGINE LUBRICATORS.



Essex "Pilot" Snap Lever, Sight Feed Glass Oil Cup.

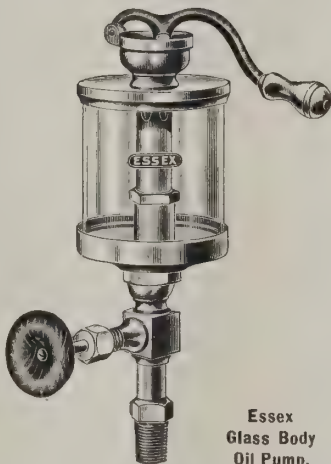
"Simplicity Is the Essence of Durability and Economy."

Such are the ESSEX LUBRICATORS, having few parts (none complicated), made by skilled mechanics, of the best material obtainable; and each lubricator thoroughly tested before leaving our factory.

OUR 1904 CATALOGUE, illustrating and describing the many styles of LUBRICATORS made by us, mailed postpaid to all parts of the world.

We carry a large stock and make Quick Delivery.

Ninety per cent. of automobile makers in the United States of America use exclusively the Essex Automobile Lubricators.



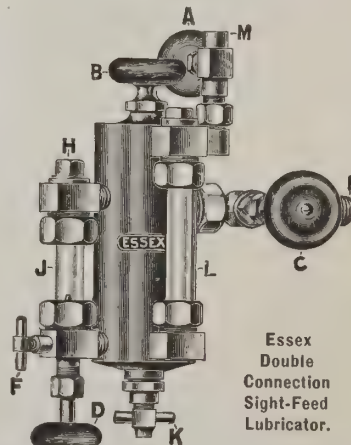
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SIGHT-FEED LUBRICATORS, OIL CUPS, OIL PUMPS, OILING DEVICES, GREASE CUPS.

Note.—With the view of facilitating our increasing EXPORT TRADE, we desire to communicate with one energetic merchant in each trade center of the world.

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Essex Double Connection Sight-Feed Lubricator.

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BORN & CO.

Columbus, Ohio, U. S. A.



ONE OF A DOZEN

good reasons why you should drink

Born's

XX PALE BEER

is because it is brewed from the best materials.

A GOOD SPRING TONIC.

We are prepared to ship in any quantity, and earnestly solicit your orders direct to our offices, or through any responsible export merchant. Satisfaction guaranteed.

BREWERS and EXPORTERS of

BORN'S CELEBRATED XX PALE and MUENCHNER BEERS.

The Absolute Purity and Superior Flavor of Our Beers Are Universally Acknowledged.

For Immediate Delivery We Make Introductory Offers as Follows:

OFFER No. 1.

3 doz. quarts	Born's Muenchner, packed in barrel	\$10.00
3 " "	" " " " " "	net cash, F. O. B., N. Y.
5 doz. pints	Born's Muenchner, packed in barrel	\$10.00
5 " "	" " " " " "	net cash, F. O. B., N. Y.

OFFER No. 2.

6 doz. quarts	Born's XX Pale, or 6 doz. quarts Born's Muenchner, packed in barrels,	\$10.00 net cash, F. O. B., N. Y.
10 doz. pints	Born's XX Pale or 10 doz. pints Born's Muenchner, packed in barrels,	\$10.00 net cash, F. O. B., N. Y.

OFFER No. 3.

One car lot (130 bbls.), \$9.00 per barrel, F. O. B., N. Y.

NEW USES FOR AUTOS.

Motor Cars Are Entering Many Fields of Business and Other Usefulness.

WITH the wholesale invasion of auto vehicles, and the consequent rejection of the slower means of transit, the horses are eating their heads off in their stalls, while steam engines and other primitive modes of locomotion rust away in idleness. The day of the long faithful four-footed beast of burden, which has patiently dragged after him every kind of wheeled contrivance made by man, is waning fast with the appearance of auto power. Everywhere one turns in America one sees the horse and old-time vehicles giving way to motor cars. A municipality runs by auto power street cleaners and sprinklers that penetrate the smallest and all trackless streets, a trolley company owns repair wagons so compact as to obviate the usual congestion caused by the original big, clumsy wagons, and store deliveries, a big item in the routine of every-day life, are made in a small fraction of the time formerly consumed.

Then the need of the noisy trolley is done away with in many city streets—much to the relief of the inhabitants of the fashionable quarters—by the auto omnibus, which rolls swiftly and noiselessly through the streets and saves the time and patience of every one. Besides this, by means of this all-conquering power, the difficulties of hauling and making a way through trackless wastes and forests have been overcome by motor vehicles, when even the horses and wagons, going at snail's pace, could scarcely make way, and the use of steam engines was an impossibility.

Even the war-path is invaded by the horseless carriage, which leaves destruction in its wake while escaping from it. This death-dealing carriage recently made its appearance in London in the shape of a round steel shell, spiked on the top with three formidable guns, as a contrivance for road and coast defense in time of either naval or land battle.

Its principal object is to act on the defensive on the coast roads, or with certain modifications for offensive work over smooth or rough roads; for keeping open lines of communication, hauling guns into position or for carrying and hauling stores and men. As it is impervious to bullets of small caliber it may also be effectively employed to dampen the ardor of street rioters or for searchlight operations.

The main object of the car, however, is that of coast defense, and it could, if employed in sufficient numbers, make it impossible for any landing party of the enemy to come ashore, for this war car would soon be able to destroy or sink any invading forces. The great mobility and therefore the great range of action, the fact of its being able to carry sufficient fuel for some 500 miles, the invisibility of the car itself, the absence of noise, as well as its general construction, all add to its great scope and utility.

Amid snow, ice and trackless forests, lumbering and hauling logs are now carried on in America with the greatest ease and speed, for the snow traction auto, the biggest thing in automobiles, has successfully smoothed away all the difficulties attending the work. This huge machine, in successful operation in Gen. Russell Alger's extensive Michigan pineries, plows its way through snow-drifts and over rocks, stumps, everything in the way of obstacles in an uncleared country, leaving behind it a smooth and hard-packed ice road. At the same time it carries an enormously heavy load of lumber and moves at the rate of about twelve miles an hour.

The snow traction auto, however, is not the only machine that can overcome difficulties in transit. Even in paved city streets obstacles apparently insurmountable constantly make their appearance, and are promptly overcome by auto power. The use of horse-drawn emergency wagons by the trolley companies of large cities will soon be entirely dispensed with.

A trolley company in Washington City, the capital of the United States, has installed an electric automobile trolley repair vehicle, which in actual service is daily demonstrating its economy. It was determined to take advantage of the company's facilities for battery charging by procuring a self-propelled repair wagon. Since its installation the vehicle has met every requirement, and when not in use the storage space is small and the cost of maintenance practically nil. The vehicle complete weighs about three and a half tons. A towing device for replacing derailed cars or taking a disabled car to the repair shop is provided.

Of even more importance in keeping a municipality up to the requirements of modern progress is the unique automobile street sweeper and sprinkler that a Frenchman gave to the world. There are the trolley sweepers and sprinklers, to be sure, but this little machine, which has won such universal favor, is far more serviceable—being small, compact, and manipulated equally well in highways and byways. No tracks are needed for the running of this machine, which goes into places that have probably never felt anything but a semi-occasional scrub from the human street-sweeper's broom.

For speed and comfort in the way of street carriages nothing can exceed the American automobile-bus, which first made its appearance in London streets and has rapidly made its way into popularity in other big cities on both sides of the Atlantic. This auto-bus slows up for a passenger, and is off again, all in one-half the time it took the original bus to stop. The remarkable ease and facility with which the huge vehicle is made to thread its way through the crowded traffic of the city streets has been a great card in its favor among pedestrians, and the fact that it is self-controlled and needs no expert drivers has found favor in the eyes of the street railway companies, so the automobile-bus has undoubtedly come to stay.

American Automobile Production Increasing.

ONE of the large automobile manufacturing companies in America is building two additional factories to supply the demand. An officer of the company said recently that the enlargement is due to the increasing demand for automobiles. He estimates that the amount of money expended for automobiles in the United States, based upon the business thus far this year, will exceed \$24,000,000, which sum is about twice the amount of the preceding year.

"We expect," said he, "to manufacture more automobiles this year than any other concern in the world, and we have orders on hand now to keep all our factories busy for several months. At present the demand is chiefly for pleasure vehicles of the best grade, the demand for pleasure vehicles being about five times as large as that for automobiles for practical utility, but it is in the latter direction that the business will grow most rapidly in the future."

"One department store in Boston (U. S. A.) recently ordered twenty-four automobiles for delivery purposes, and similar orders are coming in from all of the large cities in the United States. Improvements are constantly being made in vehicles, both electric and gasoline. For city use the electric automobile seems to be gaining in popularity, but the touring cars are using gasoline. The fact that a large wagon and carriage manufacturer is branching out into the automobile business is an indication that automobiles are supplanting other vehicles. We propose to show the grocers throughout the country that they can deliver their goods cheaper by automobile than by horse trucks and drays, as well as transport their goods more rapidly, and we intend to pay especial attention to their wants in this direction."

Probably the Largest Automobile Ever Built.

WHAT is believed to be the largest automobile ever constructed has been turned out by an American company. The length of the body over all is 26 feet and the width 8 feet. Comfortable seating room is provided for fifty persons, and sixty can be carried without overcrowding. The seats are placed crosswise and have hinged center sections, so that an aisle can be opened, running the full length of the car. The body is mounted upon a steel frame and the electrical and mechanical equipment is similar to that of the largest-sized electric commercial truck, except that the car is geared to a speed of $9\frac{1}{2}$ miles per hour, or about 3 miles per hour faster than truck speed.

The wheel base is 123 inches and the wheel diameter 36 inches. The solid rubber tires are 7 inches in diameter. The battery consists of 44 cells of the oxide type and is sufficient for 30 miles of travel with a full load. There are two motors of 40 amperes, 30 volts each, connected by reduction gears and chains to the individual driven rear wheels. The battery is carried in a single tray, which is raised to its place beneath the body by a simple hydraulic lift and secured by automatic locks. By this device the batteries can be changed in a few minutes. The vehicle is covered by a wood roof supported by iron rods, the sides being left open.

Future Market for American Vehicles.

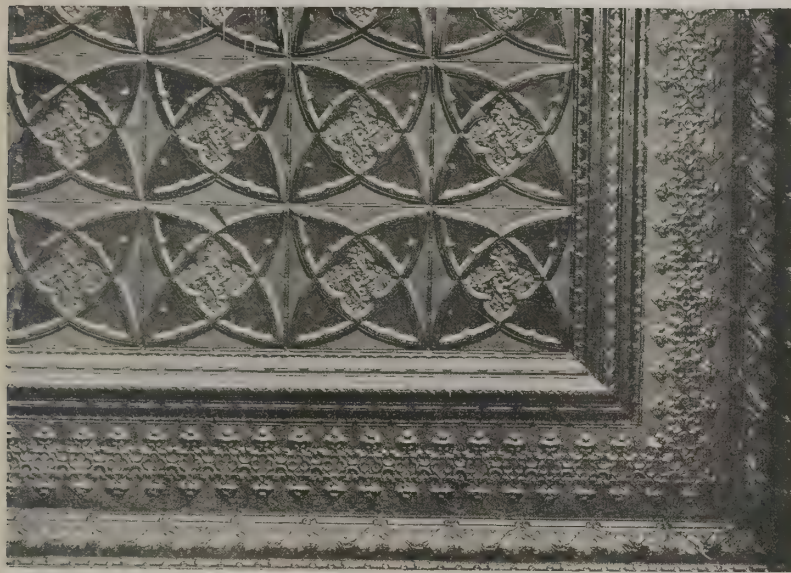
THE possibility of developing a valuable export trade in vehicles with the west coast of South America, or at least in vehicle material, has for a long time attracted the attention of some enterprising exporters. If the Chilean Government carries out its present program there will be some opportunities for an early growth of business in that direction. That Government expects to expend some \$100,000,000 gold on public works within the next fifteen years. Contracts amounting to over \$30,000,000, it is reported, will be initiated during this season, including the Trans-Atlantic Railway—contracts for construction of sections of which have been allotted to W. R. Grace & Co. and S. Pearson & Son, Limited—the sewerage and paving of Santiago, the harbor improvements at Valparaiso, etc., and several hundred miles of railroad. Tenders for cars, locomotives, etc., will soon be called for, which will result in the expenditure of some \$250,000.

Increase in Wire, Wire Nails and Pipe Exports.

RETURNS of the exports of wire, wire nails and pipe for June, which have just been received, show a total of 10,000 tons, being a gain of 2,000 tons over the preceding month. The exports of wire amounted to 3,932 tons. The chief consignments went to South America, Australia and Europe. The exports of pipe amounted to 4,641 tons. Europe received 3,601 tons, 2,835 tons of which went to the Continent. Antwerp headed the list, that Belgian port taking 1,433 tons in three lots. One thousand four hundred and sixty-five tons of wire nails were consigned abroad during the month. Great Britain and Australia were the largest purchasers. Four hundred and sixty-six tons went to British ports, Liverpool taking the bulk, while Glasgow, London, Manchester and Bristol took the balance between them. Two hundred and fourteen tons went to Chinese and Japanese points. Australia was sent 399 tons in three lots. Chili was forwarded one lot of 128 tons. Constantinople was sent 142 tons in one shipment. Other exports of wire nails last month went to Mexico, Malta and South Africa.

A Sharp Demand for Machinery.—The machinery manufacturers in America received last month inquiries for a large amount of machinery which is needed in the development of new manufacturing enterprises.

EMBOSSED METAL CEILING, Side Walls and Center Placas. LARGE AND COMPLETE LINE OF CLASSIFIED DESIGN.



New Catalogue sent on request to those interested.
SPECIAL PRICES FOR EXPORT.
J. H. ELLER & CO.
CANTON, OHIO, U.S.A.

THE INGERSOLL AMERICAN WATCHES

THE Ingersoll watches as shown here have revolutionized the watch trade of the world. They have established new standards of value. Buyers of watches, in justice to their own interests, must consider this line. Foreign buyers have long been accustomed to purchasing cheap watches, both cheap in name and quality, but we now offer an opportunity to purchase watches guaranteed to keep good time at very low prices. Our watch factory is the largest in the world devoted solely to manufacture of time-pieces. The output is five thousand watches per day, which go to all parts of the world.

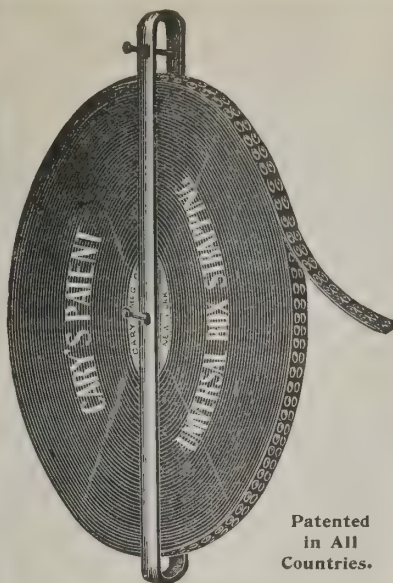
PRICES
Yankee, \$7.80 doz.
Eclipse, \$10.20 doz.
Triumph, \$13.20 doz.

F. O. B. New York.

Catalogues and full information, also special discount for quantities, may be obtained through your commission house or direct from us.

One gross of watches packed for export weighs about 50 lbs. and measures 14 cu. ft. Send all orders through your commission house and send us copy of same.

Robt. H. Ingersoll & Bro.,
Manufacturers,
67 Cortlandt St., New York City, U.S.A.



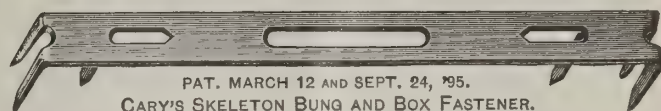
Patented
in All
Countries.

CARY'S UNIVERSAL BOX STRAPPING

Made of soft steel through which nails can be easily driven.

Put up in coils of 300 feet and packed 20 coils in a case.

Made in four widths, viz.:
 $\frac{1}{2}$, $\frac{3}{8}$, $\frac{3}{4}$ and 1 inch.



PAT. MARCH 12 AND SEPT. 24, 1905.
CARY'S SKELETON BUNG AND BOX FASTENER.

SKELETON AND TWISTED PRONG FASTENERS.

MADE IN VARIOUS SIZES.



PROTECTIVE SEAL
For Wine Cases.

CARY MFG. CO., 19 & 21 Roosevelt St.
NEW YORK.

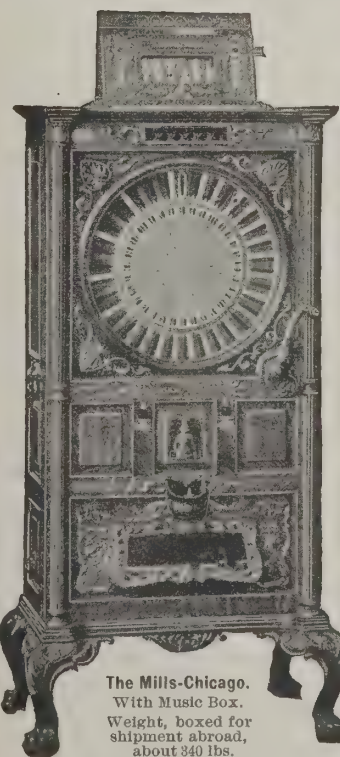
CABLE ADDRESS: "CARLEIO."

MILLS NOVELTY CO.

INCORPORATED.

CAPITAL, \$500,000.00.

CHICAGO, U. S. A.



The Mills-Chicago.
With Music Box.
Weight, boxed for
shipment abroad,
about 340 lbs.



Mills Novelty Co.'s Works, Chicago, U. S. A.

Largest Manufacturers and Exporters
in the world of all kinds of

Coin- Operating Machines.

Our 80-page catalogue, just issued, profusely illustrated, in colors, describing the many styles of Coin-Operating Machines made by us, will be mailed post-paid to all parts of the world.

Nearly all our Coin-Operating Machines can be made to be operated by the coin of any realm.

All machines are boxed ready for steamer, and prices quoted will be f. o. b. cars New York or San Francisco. Orders received through export houses. When ordering through export houses specify MILLS NOVELTY CO.'S COIN-OPERATING MACHINES, and to avoid errors, please mail us duplicate of order.

Worth and Uses of Our Traction Engines.

ONE of the prize-winners in the recent competition held by the *American Thresherman* wrote an essay regarding the full earning power of American traction engines. Most of our foreign readers are already aware of the superior advantages of our machines, but the following will interest them, nevertheless.

"The term traction engine implies a steam engine that is capable of self-locomotion—that is, able to move by its own energy. In other words, it has potential energy capable of doing work. Since the engine is capable of performing much work, if all its energy is utilized, it is important to determine what is the full earning power of the traction engine. In order to do this intelligently it is necessary to limit the subject to only such conditions as are found on the average farm in North Dakota (U. S. A.). The owner and operator of a traction engine is generally a farmer, and it is to his benefit that the following discussion of the full earning power of the traction engine is offered.

"The topic may well be divided into three heads for convenience of discussion—namely: Regular or customary work, occasional or locomotive work, and lastly, utility or stationary work. Each one of these topics will be considered individually in a logical order. The regular or customary work of the traction engine is to furnish the necessary power to separate the golden grain from the baser products—straw, chaff, weeds, etc. It works in conjunction with the grain separator—it furnishes the energy and the separator does the actual work. Besides doing this work the engine is capable of moving, not only itself and the separator, but also the equipment that belongs to a threshing outfit. While so doing all its energy is utilized, and a full earning power of the engine is the result.

"The period of this active service of the traction engine, however, is only of short duration—thirty to forty days at most; all the rest of the year in the United States the engine has no regular work to do, and is therefore generally idle, until the earth has made another revolution around the sun. Such a condition of affairs necessitates much loss to the owner, as the engine produces value only when it is working. It is with this in view that the second topic will be taken up for discussion.

"Occasional or Locomotive Work.—Experiments have proved that a traction engine for plowing is of economic value, since it can pull four ordinary gang plows with ease. In a stony country, however, it is not advisable to use an engine for this purpose, because it will tear the plow to pieces, but where no stones are present it gives great satisfaction, especially in the fall, when the ground is sufficiently dry. For pulling a road-grader the traction engine gives good satisfaction, as it can be operated with ease, and its speed and strength modulated, thus insuring the best work. In stony localities it may be used for pulling out the heaviest rocks, etc. It is not advisable to supplant horse-power by steam unless great strength is required, as the cost of running an engine is greater than the keeping of two or four horses.

"Utility or Stationary Work.—During the winter months the traction engine may be made to do much profitable work at very little expense. To derive the most profit from the engine, it should be placed in a substantial house large enough to permit of a work-shop, a feed-mill, etc. The engine-house may serve as a blacksmith-shop, wood-shop and storeroom for many farm implements. Thus the cost of a special engine-house is unnecessary. The engine may be made to run the feed-mill (which should be in the same building). Besides grinding his own feed the thresherman can make a nice little sum by grinding feed for his neighbors during the dull times. By proper arrangement the engine can be made to pump the water and force it into the barn, thus reducing work and expense. Since North Dakota is destined to become a corn State, a corn-shredder may well be put in and operated by power of the traction engine. A wood-saw may also be put in with very little expense. By skill and ingenuity two or more of these machines may be kept running at the same time, thus saving time and money. It is not expedient for a farmer to have too elaborate a machine shop, as it then will divert his attention from agricultural pursuits. The equipment mentioned, however, is both necessary and economical, and should therefore form a part of every farmer's stock of farm implements.

"Steam heat is acknowledged to be the best and most uniform. It is easily regulated and is free from all danger of fire. At a moderate expense every owner of a traction engine may have steam heat in his house. The economy of this arrangement is twofold. First, it saves the expense of a furnace or any other heating apparatus; second, steam heat may be furnished much cheaper than the ordinary stove heat.

"From an economic standpoint, steam heat is far superior to any other method of heating on the farm. Since the traction engine is a straw-burner the cost of fuel is reduced to a minimum. Flax straw, especially, is very efficient as fuel, since it burns slowly and gives off much heat. Experiments have shown that a flax-straw fire will burn almost as long as a wood fire. It is, therefore, self-evident that the steam heat as produced from the traction engine is of economic value. If the flax straw was pressed it would be easier to handle. If convenient a hay-press should form part of the equipment of the machine-house.

"For convenience and economy as well the power-house should be as close to the house as permissible if steam is used for heating purposes. A little greenhouse may be put up in connection with the engine-house, thus increasing the horticultural interest on the farm. A traction engine housed and cared

for in this manner will last much longer than if left out of doors to the destructive forces of the elements.

"The ideas set forth in this essay are intended as suggestions and not as arbitrary rules. No attempt has been made to describe the construction of the engine-house or machine-shop, neither has any attempt been made to give a technical description of the arrangement of the pulleys, etc., necessary to operate each machine. The construction and arrangement of these must be left to the skill and ingenuity of the individual who owns and operates the traction engine."

Our Agricultural Implements Abroad.

WE referred in our last issue to the progress which was made in last year's American export trade in agricultural implements. The editor of *Farm Machinery* has written a very interesting article on the subject, which is worth reproducing in full:

"There is real romance in the bold statement that this country sent \$21,000,000 worth of agricultural machinery abroad in the year ending last June, or nearly \$5,000,000 more than in the preceding year. The romance is twofold—of a country paying the highest wages in the world, yet meeting with its harvesting machines and farming tools the competition of goods made by low-priced labor, defeating them in the neutral markets and then successfully invading the very markets in which they are at home, and of whole continental areas, inert under ages of tradition-bound cultivation, responding at last to the touch of new-world resourcefulness.

"In all parts of the world American agricultural machinery is standard; everywhere it is welcome. The Canadians are imitating it, and they are spirited rivals. The Germans are imitating it and selling their harvesters beyond their own boundaries; but even in Germany, on the vast estates of Posen, Silesia and East Prussia, the demand grows for American machines. In Russia agricultural machines are the best line of American business. De Witte exempted them when he began the tariff war with the United States, because he felt they were needed in his chosen task of internal development. They are admitted duty free in Newfoundland and Syria. Poland, resentful of Germany's anti-Polish propaganda, has turned from German to American harvesters.

"Our people pushing these machines in foreign markets for their own gain—that is one side of the picture. The other is the transformation by American ingenuity of traditional methods of agriculture, of conditions of rural existence that have not changed a great deal in 2,000 years. Our labor-saving farm machinery is conquering the peasant conservatism of Europe and Asia, as the reports of our consuls attest. Among other things they tell us that in the interior of Spain the peasant is using the same plow he used in the time of Pompey; in southern Greece the same plow he used in the time of Pericles; in Syria the same plow he used in the time of the Herods. In all British Honduras there are said to be not two dozen plows; machetes do their work.

"American agricultural machinery is bringing these regions up to date. It is striking its bargain with antiquity. Our harvesters are pulled by mules in Argentina, by bullocks in Italy, by camels in Central Asia, sometimes by elephants in India.

"There is still another service they are performing. Everywhere throughout the world there is a drift of farm laborers to the cities; wages are higher there, conditions of life more seductive. American labor-saving machines, and machines made after American models, are preventing large tracts of land from going out of cultivation. In Austria, in Great Britain, they are doing the work which the peasants abandoned when they laid down their hoes and took ships for America. Curiously enough, in some countries, as in Italy, they are causing a return wave of farm labor from the cities; they are making it worth while to reclaim land from pasture to tillage.

"Some time, maybe, the Odyssey of the American harvester and threshing-machine in other lands may be written; in its way it is a larger epic than the national epic of the wheat."

New Clock Dial Displaces the Hands.

A CONNECTICUT (U. S. A.) man has invented and patented a clock which does away with the hands and dial of the clock now in common use. Instead it has three openings in the face of the clock, behind which appear numbers, so that the time is read direct, as 12—45—32, instead of a series of hands pointing out the hour, as 45 minutes and 32 seconds past 12. The system is an improvement on the clocks of to-day, according to the inventor, because there can never be any confusion between the hands, and the time is tellable as far as the figures on the dial can be read, while with the clocks of to-day the face can be seen long after the relative position of the hands has become indistinct. The clocks are to be manufactured and put on the market in the near future.—*American Inventor*. [When this clock is put upon the market our readers will be informed of the fact.]

New Device to Split Wood.—A wood-splitting machine is a recent invention of novelty and interest. It consists of a very heavy knife, which is worked backward and forward at a speed of sixty strokes per minute. The device is run by a gasoline motor of a few horse-power and can successfully split logs of wood, no matter how knotty, 2 feet long and 18 inches thick.—*American Inventor*.

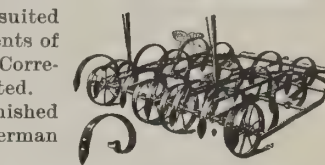
TRADE MARK

A detailed black and white illustration of a large roll of paper. The roll is partially unspooled, showing a repeating diamond-shaped pattern. Each diamond contains the text 'TRADE MARK', 'SMOOTH-ON', and 'MADE IN U.S.A.'. The paper has a textured, slightly wavy appearance. The roll is shown from a perspective that emphasizes its length and the pattern's repetition.

SMOOTH-ON MFG. CO.,
VREELAND TOMPKINS, - Chemist and Manager,
JERSEY CITY, N. J., U. S. A.

Our illustrated catalogue, printed in colors, showing the various styles of Game Boards made by us, mailed postpaid. We will also forward, postpaid, our catalogue, illustrating and describing our many styles of **COMBINATION LIBRARY, DINING, BILLIARD and POOL TABLES**. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us a duplicate of order.

Visitors to the World's Exposition are cordially invited to visit our **WORKS at LUDINGTON, MICHIGAN, U. S. A.**



COMPLETE EQUIPMENT FOR ICE PLANTS

We call particular attention to our single acting machine, and recommend it as unequalled for economy and efficiency. Send for illustrated catalog K.

York Manufacturing Co.,
York, Pa.

A SWELL FRONT desk of exceptional value to every desk user. Card index drawer with follow block attachment; private compartment with flat keyed spring lock; letter file complete; 11 pigeon-hole boxes, 9 inches deep. Special arrangement for stationery, memorandum books, etc. File boxes and card index drawer, trimmed with cast-brass holders and highly polished cast-brass knob pulls; all parts highly polished.

Special attention given to filling Export Orders. Send for Illustrated Catalogue and Export Price List. Order through buying and shipping agents, and send us duplicate of orders, so as to avoid mistakes.

Record Year in Foreign Commerce.

IN the record of the year's commerce just announced by the American Department of Commerce and Labor is presented an interesting and gratifying view of the commercial status of the United States. The fiscal year 1904, it would appear, has proved to be the banner year, the foreign commerce of the United States reaching the highest aggregate in its history. The exports of manufactures are larger than in any preceding year and the exports of domestic products exceed those of any other country.

Comparing the figures of 1904 with those of earlier years, it may be said that the total exports are larger than in any preceding year except 1901, that the imports and exports are greater than in any preceding year except 1903, and that the total commerce—the imports and exports combined—in 1904 is greater than that of any preceding year. The total commerce of the year amounts to \$2,451,574,623, against \$2,445,860,916 in 1903, and \$2,310,937,156 in 1901, the years in which imports and exports, respectively, made higher records than those of 1904. Thus, while neither imports nor exports for 1904 reach the high record of a single earlier year the total of imports and exports combined in 1904 exceeds the total commerce of any earlier year.

In manufactures the exports of the year will make their highest record. While the figures of manufactures exported for the full fiscal year 1904 have not yet been completed by the Bureau of Statistics, the fact that the eleven months' figures already completed exceed by \$17,000,000 those of the corresponding period of the record year, 1900, makes it apparent that the total exports of manufactures in 1904 will be greater than those of any preceding year. It is also apparent that the exports of domestic products from the United States will exceed those of any other country.

An interesting feature of the report is the comparison it affords between the commercial progress of Great Britain and the United States. The vicissitudes in the race for commercial supremacy between the two countries reminds one forcibly of the alternations of success and failure in the contests between two great rival colleges in the field of athletics. Next to the United States Great Britain is the world's largest exporter of domestic products, and up to a few years ago surpassed the United States in its total. During recent years the United States, although there have been many fluctuations, has gained steadily and rapidly upon and finally overtaken Great Britain in the commercial contest.

The first year in which the exports of domestic products from the United States exceeded those from Great Britain was 1898, the excess in our favor in that year being about \$98,000,000. In 1899 the pendulum swung the other way, the exports from Great Britain exceeding those from the United States by about \$35,000,000. In 1900 those from the United States exceeded those from Great Britain by about \$35,000,000. In the year ending June 30, 1902, those of the United States exceeded those of Great Britain by about \$8,000,000. In the fiscal year 1903 Great Britain was again at front, her total of domestic exports exceeding that of the United States by \$22,000,000. In the fiscal year 1904 the United States will apparently be again in the lead, since figures of eleven months already in hand show for that period an excess of \$38,000,000 in favor of the United States.

While this steady growth in our foreign trade may be accounted for in a variety of ways there can be no question that one of the chief causes of our success is the fact that our manufacturers and exporters have succeeded in demonstrating abroad that the products of the United States can be relied on to be what they are sold for. In other words, that our foreign trade is conducted along the lines of strict commercial integrity.

German Statesman on International Trade's Future.

UNITED STATES CONSUL GUENTHER, at Frankfort, in a recent report to the Department of Commerce, refers to the present Minister of Commerce of Prussia, Mr. Moeller, as a leading manufacturer whose "administration of the office, his activity and speeches show the manufacturer and practical business man." Recently Mr. Moeller was on an inspecting tour in the Silesian manufacturing district, and at a reception given him by one of the Chambers of Commerce there he made the following noteworthy remarks:

"Germany's greatness has been brought about by her industrious and laboring forces, especially by her business people; in her capacity for work lies Germany's superiority over other nations. Therefore, we should be very careful not to stifle or limit opportunities for labor. We Germans can look with confidence toward the future, yet we must beware of entertaining false notions. During the next decade it will not be the individual but the nation which will have to struggle for existence in commerce and manufacturing. There are always more nations appearing in the world's market as new competitors, whereas the consuming capacity of that market does not increase. If the present existing spirit among nations to close their borders against imports attains further growth, we Germans may have to suffer.

"In the development of our industries we have not, as England has done, confined ourselves to certain specialties; on the contrary, we have cultivated all varieties of manufacturing. England's prosperity has already waned because new industrial nations themselves produce the specialties with which England supplied them. These are usually articles manufactured in immense quantities. Herein lies England's danger.

"As to work in a contrary direction, it behooves us to promote trade schools in order to stimulate the production of the finest and highest class

articles of manufacture, thereby affording employment to a greater number of persons. Our future depends upon the production of such articles which will be sold in foreign markets, as these enable us to maintain our labor force. We must either export our goods or our working people."

The time is not far off when articles for general consumption (textiles, metallic wires, etc.) will be mainly exported by those countries having natural advantages in manufacturing the same or producing the raw materials thereof. Thus England and other industrial countries of Europe will have to surrender the world's market to favored nations like the United States. It is only in articles requiring great artistic taste and superior skill of handicraft that the European nations will be able to compete successfully. As such, France is now predominant, and Mr. Moeller's admonition to the German manufacturing class seems to mean in effect, "Follow on French lines of manufacturing for export trade."

A View of America's Popularity Abroad.

BRITISH and other foreign sentiment regarding America is treated of in an interesting manner by a writer in *Harper's Weekly*. In the course of a long article he makes these observations: "As a matter of fact no English politician ever thinks of mentioning the United States in a speech without some complimentary adjective, and the British public, which has long ceased to be the most stolid public in Europe and become instead, thanks to cheap reading, one of the most hysterical and sentimental, always cheers heartily any allusion to 'our cousins beyond the sea' and agrees rapturously with the speaker that 'blood is thicker than water.'

"An American who tries to persuade himself that his country has a political foe in England had better stay in America if he wants to keep his faith whole. It would hardly survive a fortnight in England itself. Englishmen bear no grudges. They are proud of Washington as Americans themselves—most of them are not even aware that there was such a thing as a war of 1812—while they quite cheerfully admit that all through the Civil War and the Alabama business they were in the wrong and were rightly made to pay for it. In the visitors' room at the Reform Club on Pall Mall you will find over the mantelpiece a facsimile of the Declaration of Independence and above it medallions of Washington, Lincoln and Grant. There is something rather fine in a people that can thus candidly publish and acknowledge two of the greatest blunders in their history. But the English have grown into a big habit of always exempting Americans from the ordinary divisions of nationality. Cecil Rhodes was far from being the only Englishman whose patriotism went beyond the empire and included the race. The least imaginative Londoner feels himself and his country in a very special degree united to America. It is the nation of all others he would most like his own to be on friendly and even intimate terms with."

American Railway Material for Hayti.

EARLY last month the Hamburg-American (West India) Line steamship *Alene* sailed for Port-au-Prince, Hayti, having on board a record cargo of railway material, the freight assessment upon which alone amounted to more than \$1,000. The consignment, which included rails, switching and signal apparatus and rolling stock, was for the Chemin de Fer du Nord, a railway being constructed by the Haytian Government, from Cape Haytien on the north coast of the island to Hinche, some thirty miles inland. When completed it will traverse the rich Ste. Suzanne district, which abounds in mines of copper and other ore and varied timber lands, as well as cocoa, tobacco and a large acreage of cultivated cotton. It is intended ultimately to extend the road southward for some 200 miles to connect at Thomazeau with the Port-au-Prince Railway, which is now operated by German capital, but which, it is said, the Government purposes soon to take over under the original concession.

A Hint for American Exporters.—It has been suggested by George H. Jackson, United States Consul at La Rochelle, France, that the existence of a direct service between Montreal and that city affords an opportunity to importers and dealers in that part of France to obtain merchandise directly from America instead of having them sent by way of Havre or Bordeaux, or even Marseilles, as at present, necessitating a long railway haul and heavy freight charges. Mr. Jackson believes that if American goods were sold at the lower rates which direct transportation would make possible, such products as fresh fruits, canned fruits, meats, etc., would become very popular. "York" hams, packed in Chicago and Cincinnati, are now retailed in La Rochelle at 32 cents per pound and American leaf lard at 16 cents. Such prices limit the market and are due chiefly to freight charges and commissions to middlemen. The subject is worthy the attention of American exporters in all lines of trade.

Agricultural Implements in Mexico.—United States Vice and Deputy Consul-General Conley, at Mexico City, Mexico, reports as follows: "About 20 per cent. of the agricultural implements and tools used in Mexico are modern; the other 80 per cent. are of the crudest and most primitive type. Only the large farmers, or haciendados, employ modern agricultural implements, and those only within comparatively recent years. Labor in Mexico is very cheap. About 95 per cent. of all modern agricultural implements and tools used in Mexico are imported from the United States."

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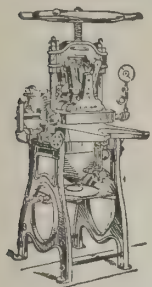
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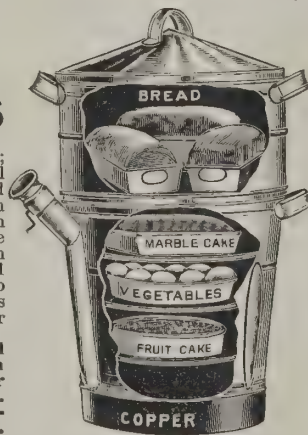


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FREE Book of 36 pages, printed in colors; handsomely illustrated; tells all there is to know about steam cookers—round or square. The 1904 models of "Ideal" Steam Cookers are entirely new in principle, design and special features. The only steam cookers made in which both round and square have whistles to call the cook when water is needed. Seamless copper tank bottoms.



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Retail \$6.50 Each.
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Net weight, 144 lbs.
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No. 6 Round Cooker
Retail \$5.00
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Cubic feet in 12—11 1/2.
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These are our best sellers, but we make thirty different sizes of Cookers. Boxed ready for steamer. Order direct or through export house; in latter case, mail duplicate order to us to avoid errors.

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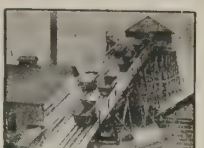


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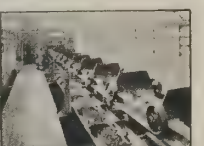
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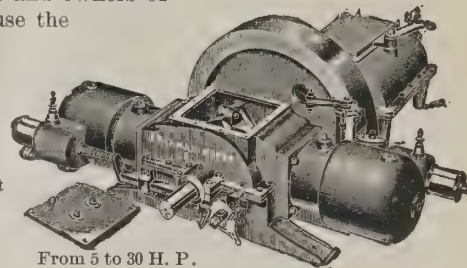
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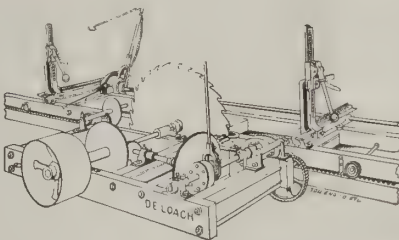


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LIGHTING OF BIG STORES.

Satisfactory Results Follow Adoption of Scientific Prism System by American Merchants.

IN their desire to make their stores as attractive as possible to their customers American merchants are ever in search of new ideas, and the matter of expense is a secondary one when it is a question of obtaining an improvement in service. With emporiums many stories in height and often extending a full city block in depth the question of a proper lighting system is of the first importance, and much attention is being given in New York and other great commercial centers to this problem of artificial lighting.

The *Dry Goods Economist* during the last year printed several articles on this subject, and in a recent issue the question of correct and incorrect prism systems was taken up and treated from a practical standpoint, due emphasis being laid on the fact that there is a great difference not only in prism glass, but also in the methods of installing it. No really good thing, it is pointed out, having a commercial value, is even without its imitations or its counterfeits, and the present demand for the prism service, which may be traced to the merits of a high-class product, has led to the introduction of prisms of a much inferior character.

An instance is cited where a firm desired to lease a store in one of the most prominent business centers in New York. One of the conditions of the lease was that the transoms over the show-windows were to be equipped with prism glass. No particular make or system of prisms was specified, and a kind of prism glass was put in. The occupants now wish they had known more about prism lighting, for while their windows contain prisms, their store actually has less light than if the glass were in plain plate.

In the same locality is a fine new mercantile building, completed within a year. Contrary to expert advice the transoms over the windows of the first floor were glazed with prisms of an inferior make. These did not prove satisfactory to the lessees and a better grade was substituted. Only the architect knows why the best prisms were not provided in either the first or second instance; the best could be had with its high-class service at a nominal advance in price.

When it is considered how many factors there are that have a bearing upon the choice of a prism equipment and its method of installation, it will be seen how important it is that only prisms which are scientifically selected and scientifically used should ever have a place in a modern store building. It is just here that the services of the lighting engineer—the expert—is found valuable. The limited knowledge of the merchant, the architect or the builder is seldom equal to the occasion.

As an illustration the case of a store building, consisting of three floors and a basement, is considered. It is flanked by a tall structure across the street at the front, with another building across a narrow alley at the rear. The sky angle is quite limited in all cases except at the sidewalk. Through the sidewalk prisms at the front and the prism skylight at the rear the basement area is made as light as any floor above would be without the prisms.

Without the prisms on the first floor, front, all the direct rays would be wholly or partially absorbed at the top of the show-window. With the prism transom the light is deflected and diffused into the interior of the store so that the area midway is even brighter than would be the spot directly back of the enclosed window without the prisms.

The rear of this floor (and also the floor above) would be poorly lighted were it not for the prism canopy over the rear entrance. A transom equipment would be of but little service here, as it could be reached but by very few direct rays. As it is, a very satisfactory service is provided.

The moral is drawn in conclusion that prisms of one, two, or even six angles are not equal to the demands of a first-class illumination, and that it is only through the advice of the illuminating engineer that the best service is possible.

Features of a New Store in New York.

OUR readers abroad are perhaps not much interested in domestic trade methods in America, but the recent opening of a great department store was a prominent feature of New York's experiences, while the methods of the concern embrace some things that are new in institutions of this kind. No name is used, the store being merely called the "14th Street Store," which is used in gold letters wherever a name is needed. The store is six stories in height and covers a large area.

Special attention has been paid to the comfort and safety of shoppers. There are lavatories on every floor, while of twenty-one passenger elevators nineteen are intended for customers' use, the remainder being designed for employees. There are four freight elevators, so that in case of fire twenty-five elevators, as well as seven stairways, are available. The precautions taken against fire are worthy of note. Not only is the construction of the building as nearly fireproof as possible, but automatic sprinklers are installed on every floor. On the sounding of an alarm, fireproof doors completely shut off the elevator shafts from the rest of the building. In case of fire during business hours, however, employees designated for the purpose will give admittance to the elevators. Furthermore, any floor may be immediately isolated, with a view to confining the fire thereto.

Upon entering the employ of the house clerks are instructed not only with regard to making out the checks, salesslips, etc., but also as to their action in case of fire. Fire drill is of frequent occurrence. All of the refuse matter, including packing, broken boxes, sweepings, etc., is disposed of in a

crematory in the basement, reached by a chute extending to the roof, with an opening on every floor. By a patent device such waste may be thrown into the chute at any time, and, though the fire may be raging hotly, so perfect is the system that the employee who throws in the stuff will not be cognizant of any heat.

The wrapping system is a departure from anything practiced elsewhere in New York. On the main floor and at busy departments in other locations there are a cashier, a wrapper and an inspector at every counter, thus obviating the sending away of goods to be wrapped and money to be changed and the delays incident thereto. In other sections of the store the pneumatic tube system is employed.

A special chute leading to the shipping room in the basement transports goods quickly and with perfect safety. On the fourth floor is a ladies' parlor and retiring room, the color scheme in green and the walls, furniture and carpet all conforming thereto.

On the roof is a children's playground, with fountain, sand heap and miniature lake. Here mothers may check their children and leave them in the care of competent attendants. The little ones are made happy with pail and shovel, outdoors if the weather permits; indoors, if not. Should they become sleepy they are put to bed and are given all necessary attention.

The restaurant on the sixth floor is a bright, cheery room, capable of seating from 400 to 500 people at a time.

In its desire to give every comfort to customers the management has not overlooked its 3,000 employees, who are furnished with a cheery recreation room on the seventh floor. A temporary hospital in charge of a trained nurse and supplied with remedies and appliances is also provided. There is a special restaurant for employees, where at noon they can procure chowder and soups for 5 cents and coffee for 3 cents, as supplementary to the lunches brought from home. Supper is furnished free to those obliged to stay for evening work, checks therefor being given the employees by the buyer or department head.

We have not space to go into details, but it may be added that in this store everything that one wants to eat or wear can be purchased and that every known convenience for customers and employees is provided.

Modern Scarecrow with Electric Attachments.

HERE is a story that is interesting, but we do not vouch for it otherwise: "Saw a new kind of scarecrow up the State not long ago," said the

New York drummer back from a trip. "Enterprising farmer up there near enough to town to have electric light in his house was troubled with the birds in his small fruit, and no scarecrow he could devise was any good. Had a foxy boy about 14, with a freckled face and a red head, who wanted to go swimming overtime, and he set the youngster to keep off the birds. Boy didn't like it, but the old man forgot all about when he was a boy, and kept the youngster at the truck patch.

"Third day was all the boy could stand, and he began to spar for a substitute scarecrow. Had one of those disk phonographs that was capable of a continuous performance, and he got it out and began performing with it. He finally yelled all sorts of wild cries into it, rigged a megaphone to the horn about seven feet long, connected it with the electric wire, started it going and went off with the gang to the swimming hole.

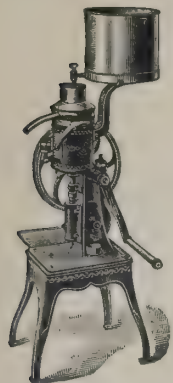
"Old man had been in town, and as he came home about 4 P. M. he heard a racket out back of the house that sounded like a cross between a political meeting and a riot. Saw the chickens sprinting across the fields squawking and noticed the birds in the air turning tail and skimming for the woods. Didn't know what had happened and licked up his horse till he looked like a Derby winner in the homestretch. Bounced out of the buckboard at the front gate and made for the garden. Nobody in sight, but row was going on that was making the berries fall off. Found the phonograph, but he didn't find the boy. Then he sat down and laughed and laughed and slapped his leg till it was sore.

"When the boy came back to supper with his shirt on wrong-side out, of course, the old man took him to the woodshed, and, with tears of joy in his eyes, told him that if he wanted to go to college and become an electrical engineer he'd pay the bills. The phonograph was still busy when I left, and the boy was crowding in all the swimming he could during the summer, because he was going to college and be a man in the fall. Did you ever hear anything like that before?"

Europeans Like Our Shoe and Leather Machinery.—Exports of American shoe machinery for the ten months ending April 30th (the latest exact figures available) were \$845,804, as compared with \$599,731 for the corresponding ten months of the year previous. This gain has been caused chiefly by the installation into European shoe factories of improved American machinery for the purpose of successfully competing with shoe producers in the United States for export trade. There is also an increasing demand from abroad for American leather machinery. One American concern recently filled a large order for leather machinery, comprising a full equipment of shaving, splitting, necking, staking, glazing and belt knife and measuring machines for a tannery in the Hawaiian Islands. Tanneries are also being fitted with American machinery in the Argentine Republic, Australia and many other countries.

American Railway for Burmah.—The Municipal Council at Rangoon, Burmah, has decided upon the awarding of a franchise for the construction and operation of an electric lighting and traction system to a local engineering concern, and it is reported, in advices just received from the Far East, that a good portion of the equipment will be of American manufacture.

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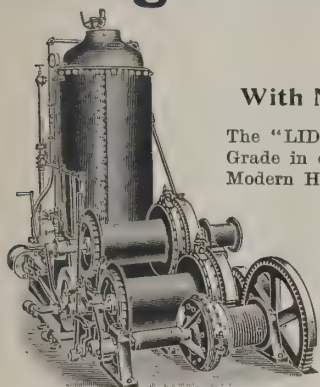
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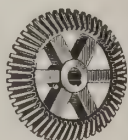


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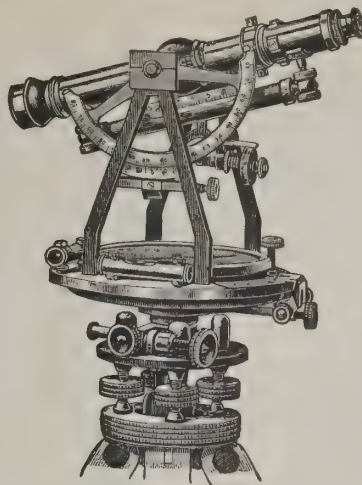
PORTABLE OVEN No. 114—Has three shelves (28x20 inches each shelf) holding at one baking Thirty Large Loaves of Bread. Weight, boxed, 300 pounds. Price, \$ 37.50

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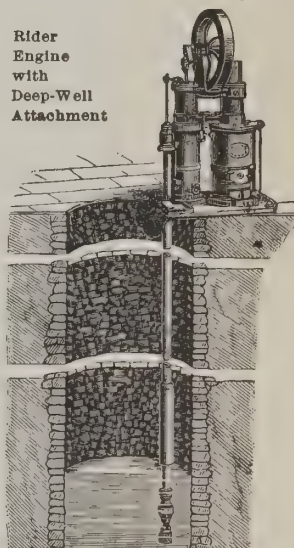
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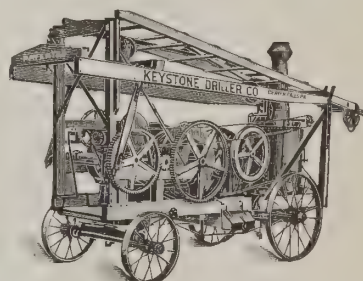
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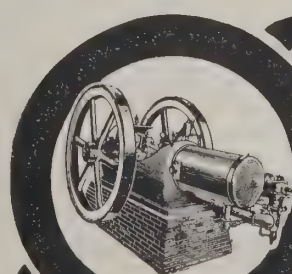
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Americanization of British Manufactures.

UNITED STATES CONSUL HALSTEAD, at Birmingham, England, sends a long report upon the above subject to the American Government, which is chiefly interesting to our foreign readers as showing British appreciation of the worth of the mechanics who make our goods for the export trade. A few extracts follow:

"My interest in tube manufacture was aroused originally by the fact that weldless or seamless cold-drawn tubes, made with exceeding care to meet certain high-grade requirements, were, and still are, shipped to the United States from my consular district. This interest increased when I learned of the engagement and importation by one great British tube company with works near Birmingham of four American workmen, to go on night and day shifts of two each, to take charge of a lap (tube) welding plant built on the 'American plan.' Besides, when I was in the United States last June I read in the newspapers that this American competition with America had been followed—the newspapers announced that the men were starting for England—by the engagement of four American butt-welders for work with another British tube company in a town near Birmingham, also in my consular district, and, strangely, this missionary trip of American workmen seemed to be regarded as a matter for congratulation upon our part.

"There has been constant progress in the manufacture of lap and butt welded tubes, increase of speed in making them and very great advancement toward perfection in results, and that these improvements have been largely American is made evident by the fact that new butt and lap welding plants in Great Britain are built on American lines.

"The workmen were brought here from Pittsburg (U. S. A.) and adjoining tubemaking neighborhoods, the lap-welders under five and three year contracts, the butt-welders under three and one year contracts, at wages many times greater than the ordinary rate of wages in this district, and, as an inducement to the men to come here, at an advance—not a big one—over American lap and butt welding wages. Of course, the inherent spirit of adventure and the idea so generally held in America, and as generally erroneous, that living is much cheaper in England than in America, influenced these men to come here. There were some disappointments in store for them, but they are fairly happy and content now, though without doubt they are the only workmen in this neighborhood who pay a good big income tax, and, of course, an income tax was not in their calculation as an offset to their earnings here. They have told me that they cannot live as cheaply here as they could at home; certainly, food is dearer; and clothing, even, all articles of wearing apparel for a family considered, they think not as cheap as at home. I really should print some letters I have had from them on the subject.

"Near one of the works the men were not able to find at any price houses with the conveniences they were accustomed to and had thought necessary to their comfort when at home, because there had not been anticipation that men in their position would have an ambition to or could afford to occupy the kind of houses they had thought they required, and they could not go into a better neighborhood—that is, the middle-class neighborhood they could afford to live in—because, working before hot furnaces they must get indoors, for a time at least, as soon as possible after they had finished their work. The company very kindly complied with one of their requirements—something unusual here—by providing them with a convenient place at the works for changes of clothing.

"In the case of one of the plants for lap-welding, while it was supposed to have been built on American lines, the furnaces were not satisfactory, the brick linings being a few inches instead of many inches thick (my consulate records show that Staffordshire firebrick was formerly shipped to the United States) and the sand for the bottom of the furnace was not satisfactory because, taken from the mouth of a river, it contained dirt, while there was need for a pure sand, and the plant was too close to other machinery.

"Most of these difficulties have been adjusted to their liking. They secured at last a pure sand, and a better brick is used, so that the furnaces are not down as often as originally and they can now make their bonus for output regularly, and I think I am correct in saying they have tripled any English coal furnace output with one furnace and same number of men—though it is not as great as they might wish, for recently they have produced more than the company can sell, and they have long lay-offs. The butt-welders in the other works found in the new machinery that the American plan had been reversed, so that tubes started fast and then went slower, and therefore did not clear, so by an arrangement with the management, the company's draftsman having been placed at their disposal, they have had to rebuild the plant so that the butt welding can start slow and finish fast."

Island Stepping Stones for Our Pacific Commerce.

SCATTERED in the Pacific Ocean, from Alaska to Siberia, there are about 150 islands that belong to the United States. They are called the Aleutian Islands, and have always been thought to be good for nothing. But recently Captain McClellan, of the American revenue cutter Manning, returned from a long voyage through the Aleutian Islands, and he reports that the map-makers of the world have made a great mistake.

All through these islands; he says, there are safe harbors. Half a dozen fleets could steam into some of these harbors at once without crowding. The dangerous rocks that were on the maps do not exist. These harbors are open all the year round. A steamship can start from Puget Sound for China,

and for 4,000 miles it can cast anchor every night in an American harbor. Naval experts say that this is the most important discovery for 100 years.

These islands are not much farther north than Japan. The climate is mild, because a warm Gulf stream flows up from the southern ocean around the Aleutian Islands. A town called Jarvis has already been founded on one of the largest islands, and a colonizing company will start other settlements at once.

"Our beef cattle will in the future come from the Aleutian Islands," says Professor Kincaid, who spent some time exploring them. There are cod and seal fisheries of the greatest value. Copper, gold, coal and iron have been found. Water power is abundant. The United States bought these islands thirty-seven years ago from Russia, but did not know their value until a few weeks ago. Now we know that they form a great island bridge from Seattle almost to Japan, and in a few years will be colonized by American citizens. "They are of incalculable future value," says Captain McClellan.

Onward March of the Shoe Industry.

IN the shoe and leather industry Americans have gone ahead in the matter of getting machinery to do all that can be done. The efficiency of the leather-maker helps the shoe manufacturer in his fight for the world's market, as nearly two-thirds of the value of his product is the cost for materials alone. The introduction of machines that not only reduce the amount of labor but frequently replace skilled labor with unskilled, and the quickness of employers to adopt new processes account for our success.

A visitor to a modern American tannery would see a man here and there dumping a hide upon a moving feed-table that smoothes and straightens it out and then passes it through a machine, pressing it evenly and gently against a revolving cylinder, spiraled with knife-blades, and drops it out at last clean and without a cut or tear. He would see "putting-out" machines that pressed and scraped tanned hides at the rate of 350 dozen per day, attended by only one man; or splitting-machines, where a belt of thin steel, sharpening itself by touching an emery-wheel as it whirled, could split a hide with the deftness of magic into sheets as thin as tissue-paper—a machine that can be adjusted to the thousandth part of an inch.

The ancient tanner paid an expert high wages to guess at the contents of his hides when sold by measure. Now an unskilled workman hands the irregular-shaped pieces to a little machine that looks something like a table with a double top, which, quicker than the mind of the expert could guess it, reckons with exactness the square contents in both the metric and standard systems.

But the new processes used in tanning are most surprising. Leather used to be tanned by soaking it for seven days in a weak solution of hemlock or oak bark to give it color, then in pits of stronger solution for six weeks, moving the hides every day or so; then in "lay-away" pits still stronger for another six weeks; by filling them with new bark for another six weeks' soak, and repeating this last operation thrice or four times. All this made good leather, but it took from six to eight months. Now even the thickest hide can be tanned by chemicals in three hours.

Advantages Enjoyed by American Farmers.

AMERICAN farmers are making rapid progress in their efforts to secure the best results from the work of tilling the soil. A writer in the *American Thresherman* says: "The American farmer quickly grasps the situation. But this is not hard to understand. We have the greatest system of imparting information of any nation on earth. The farmer, be he ever so poor, has access to journals of one kind and another, from which he keeps posted in what is going on in his line of every nature. He has the agricultural colleges to teach him, and these are stimulated by manufacturers, who contribute machinery as prizes of one kind and another, and when he attends the county or State fairs he finds the new inventions on exhibition. Not only this, but the farmer himself is a partner in the improvements of the age. Most of the useful and valuable inventions for labor-saving are the work of those who use this class of machinery, and when a man can produce a model or suggest an idea which has merit in it he finds a ready market for it among the builders of machinery. The American farmer is a better-posted man than those of most other countries, and he is even outstripping himself in these days of advantages and enterprise."

Automobiles vs. Horses.—*Country Life in America* offers some interesting figures on the comparative cost of keeping horses and automobiles. Summing up the expense, this writer says a large touring car, considering depreciation and the chauffeur's salary, could and would cost \$2,405 a year, as against \$1,257 for a team of horses with coachman, while a small machine of the "second class" might cost \$525, as against \$448, for one horse. As for efficiency and use around a country place, the machines are given the preference.

Our Trade with Cyprus.—Commerce between the United States and Cyprus is as yet in its infancy, but is likely to grow, especially along agricultural lines, America buying Cyprus wools, skins and mines, the Cypriots buying from us agricultural implements and machinery, including wind and oil engines for irrigation purposes. The total trade of Cyprus amounts to \$4,000,000, about equally divided between exports and imports, and is gradually increasing.—*United States Consul G. Bie Ravndal at Beirut, Syria.*

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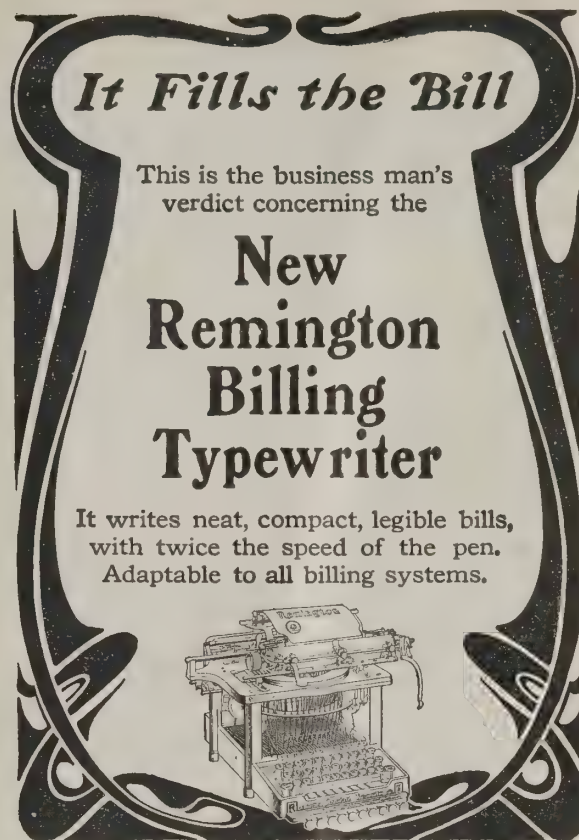
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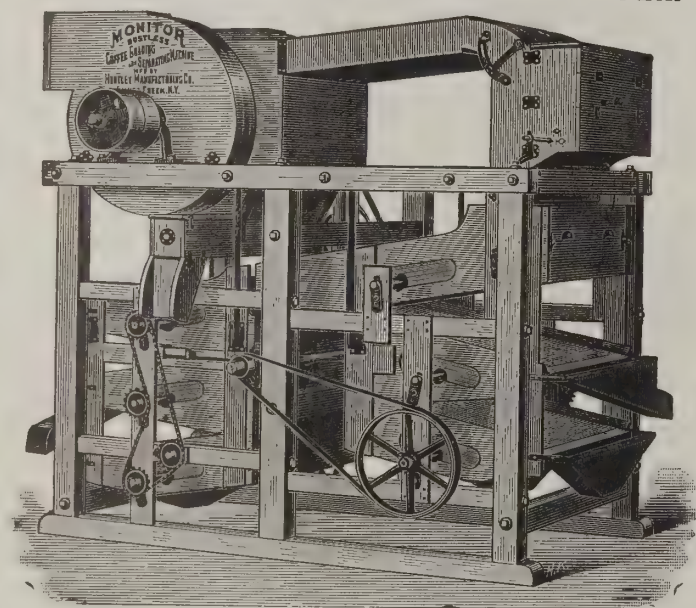
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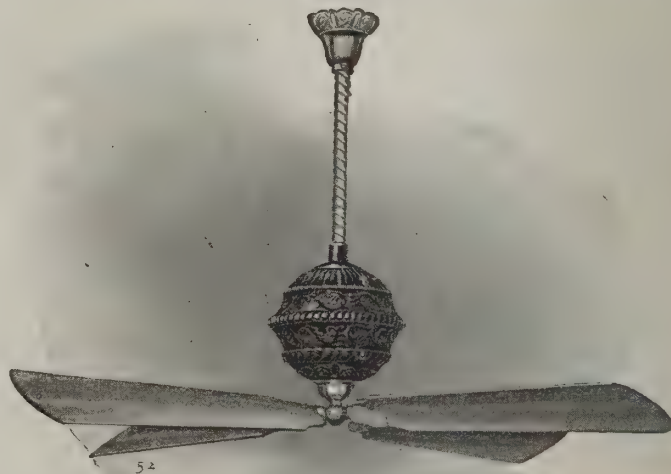
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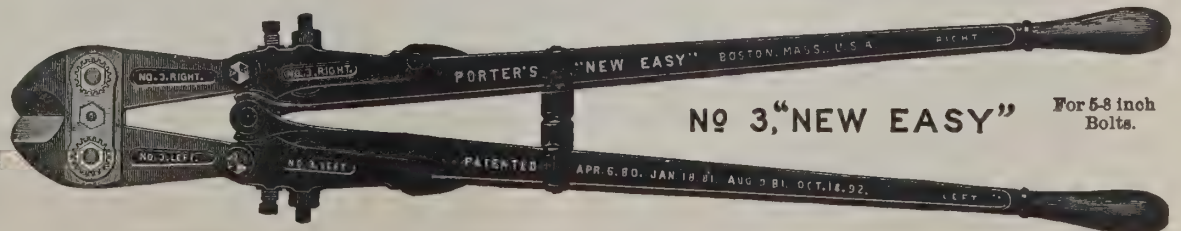
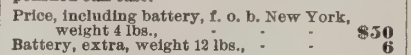
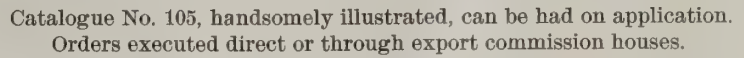
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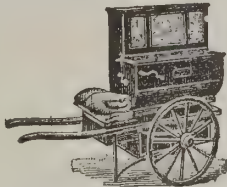
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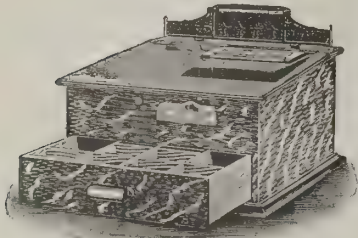
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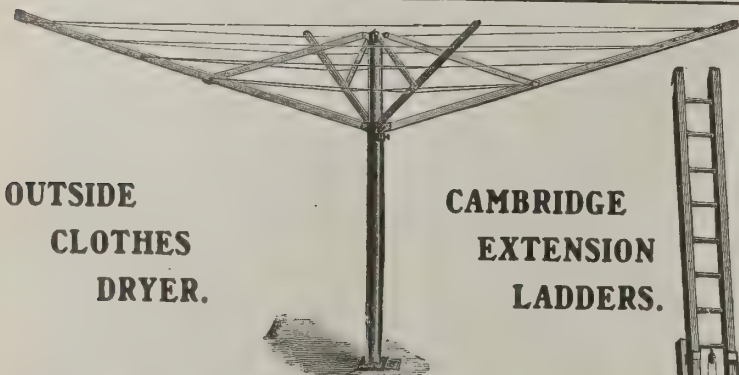
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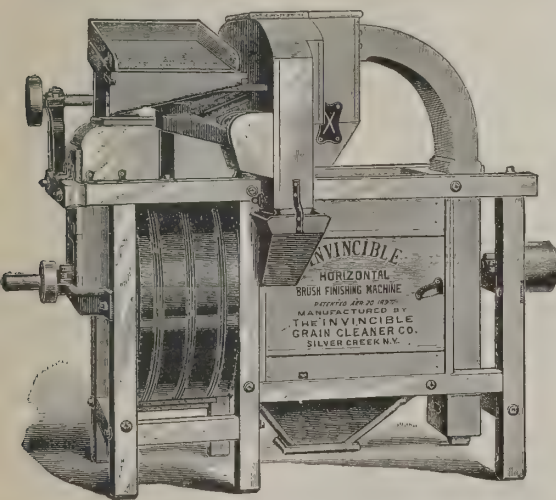
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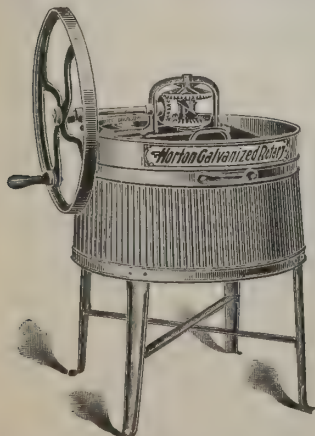
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For ALL Russet and Tan Shoes.

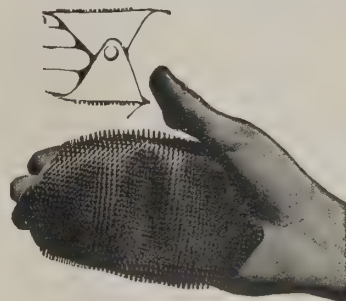
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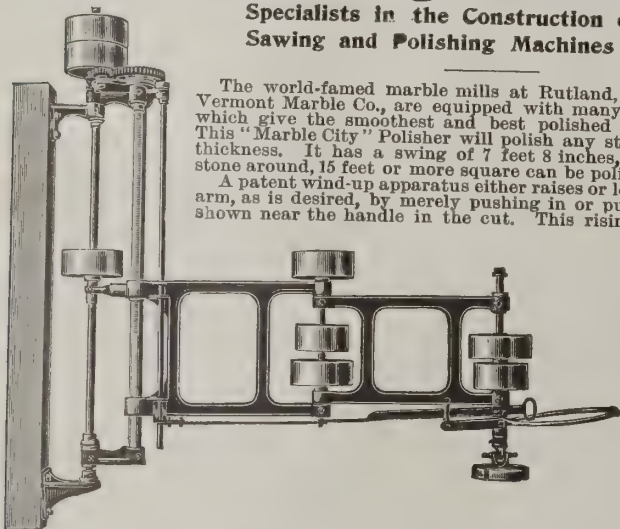
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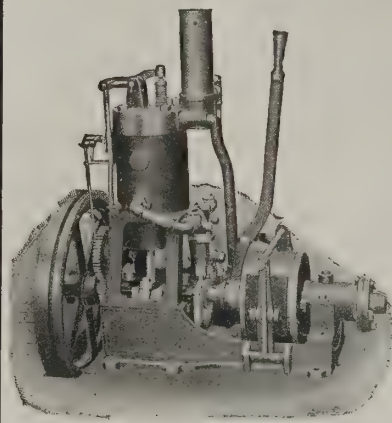
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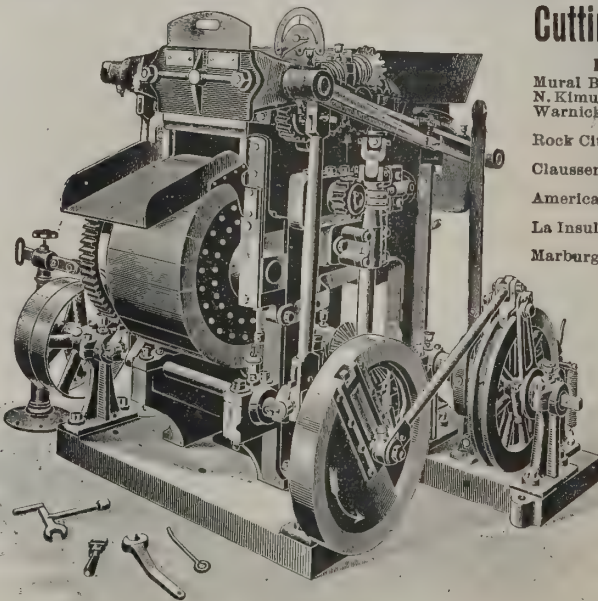
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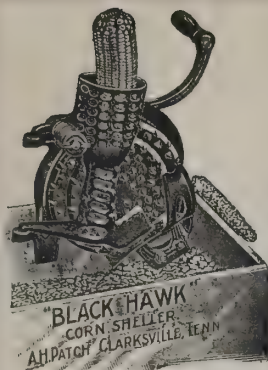
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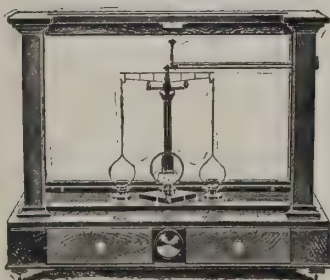
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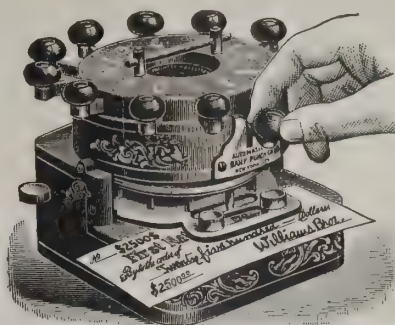
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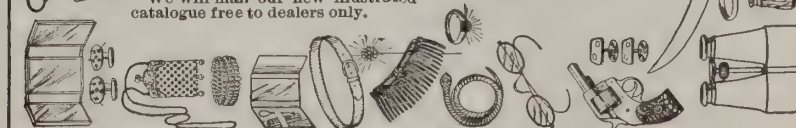
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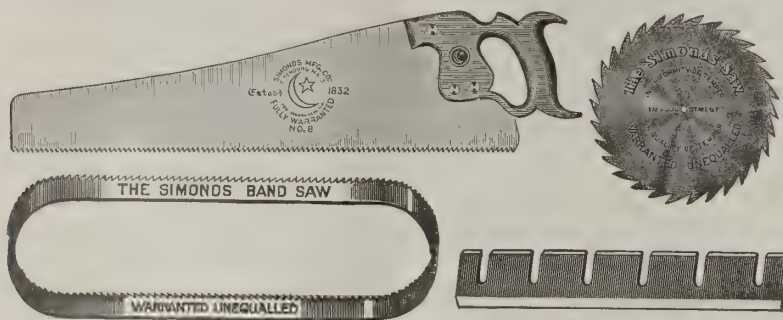
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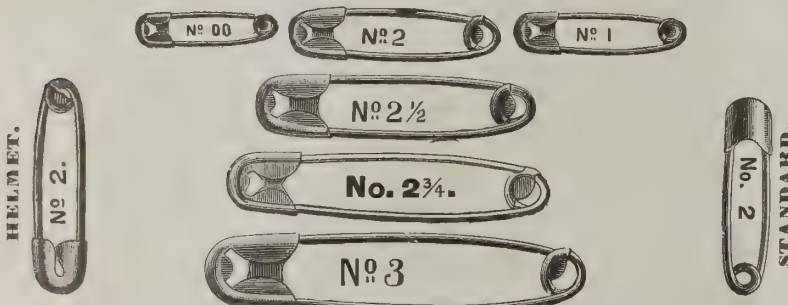
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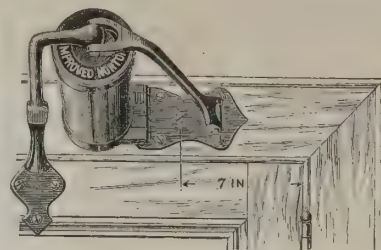
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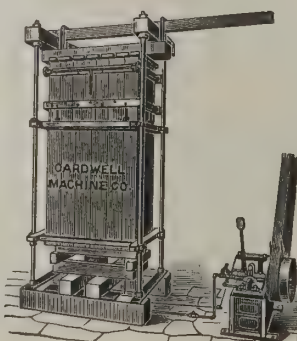


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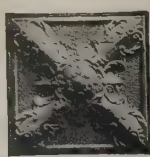
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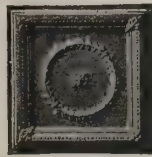
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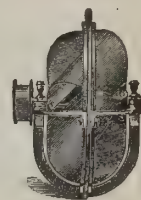
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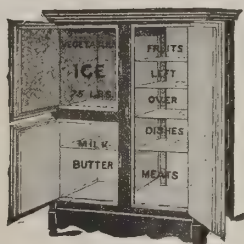
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Freely Acknowledged to Be the Best in the World
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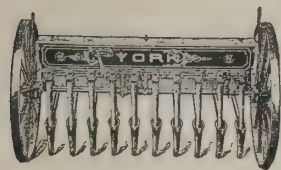
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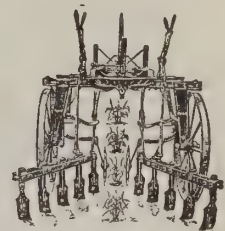
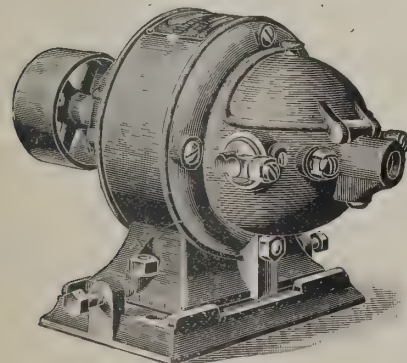
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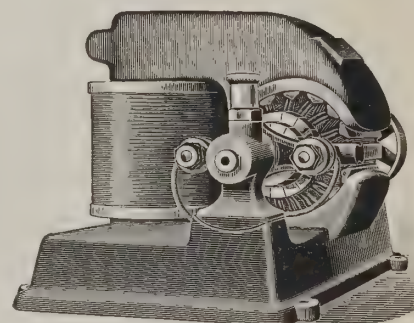
PRICE, \$15.50, f. o. b. New York,
Boston or Philadelphia.Owing to the special construction and
winding of this machine NO SPARK or
INDUCTION COIL IS NEEDED, and a
LARGE, BRIGHT SPARK IS ALWAYS
OBTAINED at the breaking of the circuit.
The Dynamo will never "lie down" when
short-circuited, and will always increase
its output at the moment when the spark
is obtained.

The Type "B" Dynamo or Motor.

PRICE, \$26.50, f. o. b. New York.

Output: As a Dynamo, 8 lights or 450
watts; for Electro-plating, 6 volts and 50
amperes; as a Motor it will deliver 1/2
horsepower.This is a GOOD machine and will give
the best of satisfaction. Standard voltage,
110, but can be wound to order for any
voltage up to 500 at special prices.

Our Illustrated Bulletins mailed postpaid.

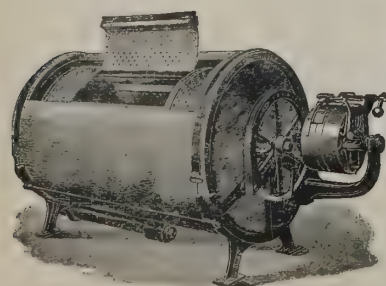


Type "B" Dynamo or Motor.

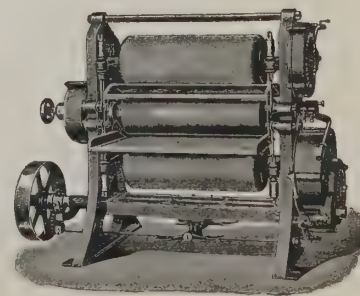
Manhattan Laundry Machinery Co.,

Manufacturers of the Highest-Grade

LAUNDRY MACHINERY AND APPLIANCES.

COMPLETE OUTFITS for Steam Laundries, either custom or new work,
also for Laundries in Hospitals, Institutions and Hotels.The largest and most successful laundry plants throughout the world have been
installed by us. Write for new Catalogue and Export Price Lists.**70-74 West Houston St., New York, U. S. A.**

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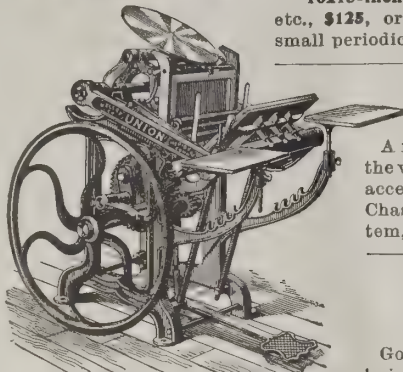


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Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

3x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., \$40.00.

10x15-inch Press, with 10 styles of type, ink, etc., \$125, or with more type, rules, etc., for small periodical, \$200.

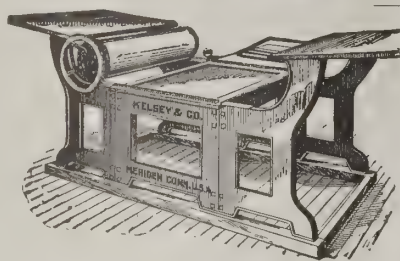


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A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, \$200. Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., \$400, outfit included.

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Good hand machine with 24-inch steel knives, \$12.00.



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For newspaper and large announcements. Bed, 29x43 inches. Price, \$500. Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.

Pierce Well Engineering & Supply Co.

136 Liberty St., NEW YORK, U. S. A.

Cable Address, "Artesianos, New York."

Manufacturers of everything required to drill and complete wells for

WATER, OIL & GAS.

Any depth from 25 to 5,000 feet.

Also Special Tools for Soundings and Test Borings for Water and Mineral Prospecting and Developing Mines; Light, Portable Outfits operated by Man Power. We furnish Pipes, Casing, Sucker Rods, Tubing, Fishing

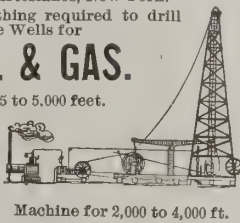
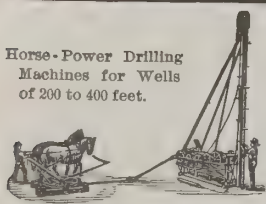
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Complete Machines and Experienced Men sent to any Country or Climate. We have the largest and most varied experience of any firm in this business in America.

Catalogues with hundreds of engravings and estimates furnished on application.

When writing, always state fully what is desired, giving greatest depth of borings required, if in Earth or Rock, and if for Water, Oil, Gas or Minerals.

Horse-Power Drilling Machines for Wells of 200 to 400 feet.



Machine for 2,000 to 4,000 ft.



Steam Rigs for 200, 350, 600 and 1,000 ft.

HIGH-GRADE FIRE APPARATUSES.

FIRE EXTINGUISHERS, CHEMICAL ENGINES, TRUCKS,

For Storehouses, Homes, Factories, Establishments or Fire Departments.

Please pay us a visit when you come to the Exposition in 1904.

When the apparatus is loaded it will throw a stream of gas (which gas is the best fire extinguisher) at the distance of 50 feet. Any woman or child can operate it as well as an expert man. It is always charged and ready for use, but it has no pressure until the moment of using. It can be used every day, lasting a lifetime. Once discharged or used it can be charged again in one minute.



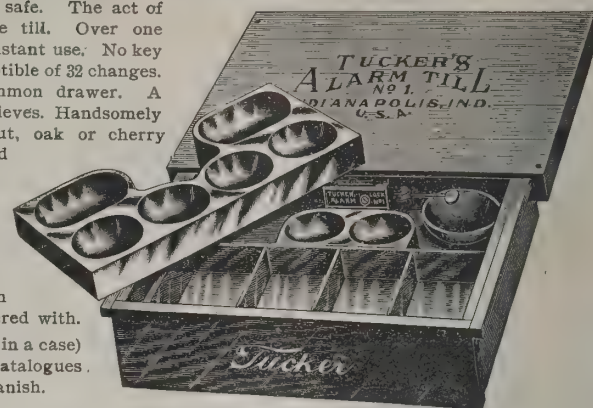
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A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

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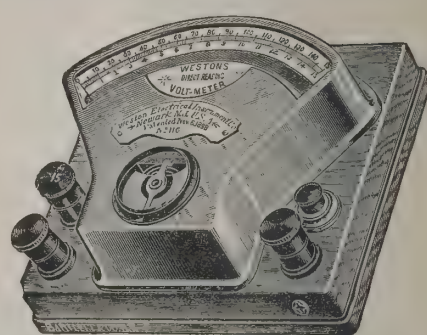
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Weston Electrical Instrument Co.,

Waverly Park, Newark, N. J., U. S. A.

WESTON STANDARD PORTABLE DIRECT-READING

Voltmeters, Millivoltmeters, Voltammeters, Milliammeters, Ammeters, Ground Detectors and Circuit Testers, Ohmmeters, Portable Galvanometers.



Our Portable Instruments are recognized as **The Standard** the world over. **The Semi-Portable Laboratory Standards** are still better. Our **Station Voltmeters and Ammeters** are unsurpassed in point of extreme accuracy and lowest consumption of energy.

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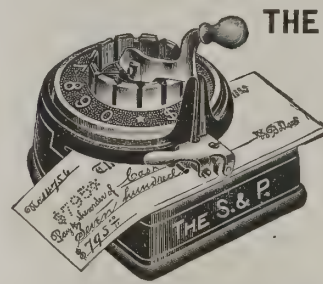
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AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.



ANY SIGN may be had in place of \$ when desired.



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The S. & P. Pinking Machine

BEST AND CHEAPEST.

Cuts fancy edge on silk or cloth. Will cut Chamois Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

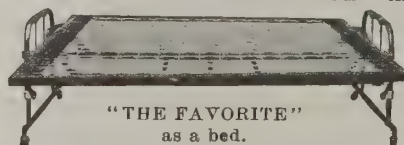
SITTMANN & PITT, Brooklyn, N. Y., U. S. A.

BATTLE CREEK IRON BED CO., Ltd.,

MANUFACTURER OF

K.-D. METAL FOLDING BEDS FOR EXPORT.

"THE FAVORITE" METAL FOLDING BED



"THE FAVORITE" as a bed.

is the latest creation in folding beds and can be easily opened or closed by a child of five years of age. Opened ready for use "The Favorite" is a full-sized bed, being 6 feet long by 4 feet 6 inches wide. Closed "The Favorite" can be used as a "Davenport," or can be adjusted by a most simple movement to a reclining-back position, as shown

FOR FOREIGN MARKETS ONLY.

Upon receipt of \$45 (U. S. gold) we will crate, ready for transportation abroad, and deliver f. o. b. New York, 6 of "The Favorite" (Knock-Down) Metal Folding Beds. Each bed weighs 120 lbs. net; packed 2 in a crate, weigh 275 lbs. gross. Gross weight of 6 "Favorite" Metal Folding Beds, packed 2 in a crate, 725 lbs. Orders received direct or through export houses; when ordering through the latter, specify "The Favorite," and please send us duplicate of order.

Battle Creek Iron Bed Co., Ltd.,

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"The Favorite" as a "Davenport." Reclining-Back Position.

TRADE-MARK
REGISTERED.

A. P. W. PAPER CO., ALBANY, N. Y., U. S. A.
The largest manufacturer of **TOILET PAPER** in the world.

CORRESPONDENCE SOLICITED.

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LASTS IN ALL SHAPES
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FOR MEN, WOMEN, YOUNG MEN AND MISSES.

Orders filled through commission houses.

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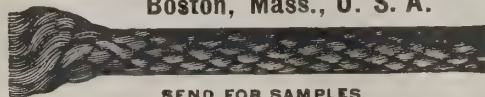
Manufacturers of the HIGHEST GRADE OF RUBBER GOODS.

Air Beds, Air Cushions, Air Pillows, Atomizers, Bands, Bandages, Bath Caps,	Bed Pans, Breast Pumps, Bulbs, Camera Sets, Colon Tubes, Cupping Cups, Dental Dam,	Dilators, Face Bottles, Finger Cots, Gas Bags, Gloves, Ice Bags,	Ice Caps, Medicine Droppers, Nasal Douches, Nipples, Nipple Shields, Nursing Fittings,	Obstetrical Cushions, Pessaries, Plant Sprinklers, Plaster Bowls, Poltizer Bags, Rectal Tubes,	Rubber Bands, Stomach Tubes, Stoppers, Syringes, Teething Pads, Teething Rings,	Tourniquets, Tubing, Umbrella Rings, Urinals, Water Bags, Water Beds, Water Bottles.
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And a full and complete line of Fine Rubber Goods for the Hospital and Surgical Trade. Our new Illustrated Catalogue "D" sent free on application.

SILVER LAKE COMPANY, The Original Manufacturers of Solid Braided Cordage.

WINDOW SASH CORD, } COTTON, LINEN OR
RAILROAD BELL CORD, } ITALIAN HEMP.
ARC LIGHT and TROLLEY CORD.



SEND FOR SAMPLES.

THE BEST IS THE CHEAPEST:
CLOTHES LINES,
AWNING AND MASONS' LINES,
CHALK LINES, ETC., ETC.

Catalogue "A" on application.

STEAM PACKINGS, SILVER LAKE & MILLER SOAPSTONE PACKING.

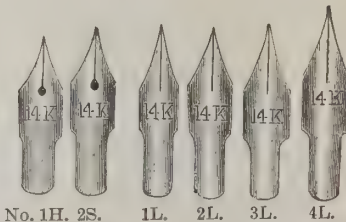
GOLD PENS—All Shapes and Styles.

For Jobbers and FOUNTAIN-PEN Manufacturers.

All Pens warranted 14kt. gold with best hard iridium.
We make Imprint Pens; Imprints free on quantity orders.**SMOOTH POINTS GUARANTEED.**

Full line Long and Short Nib Gold Pens. Send your name and let me quote you export price.

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Manufacturers and Exporters of Solid Gold Front, Fine Rolled Gold Plate and Sterling Silver Jewelry.

New and Original Designs. Link and Lever Buttons, Studs, Scarf Pins, Hat Pins, Brooches, Silk and Metal Fobs.

Every Piece Manufactured by Us Fully Guaranteed.

Orders Filled Through Commission Houses.

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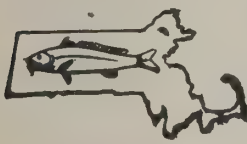
SOLID BRAIDED CORDAGE.

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Chalk Lines,
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Trade
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Boston, Mass., U. S. A.

SAMSON BRAND.

INQUIRY OFFICE FOR NORWAY, SWEDEN
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COLLECTION OF CLAIMS.

ASK FOR TERMS.

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The "PIPE OF PEACE."

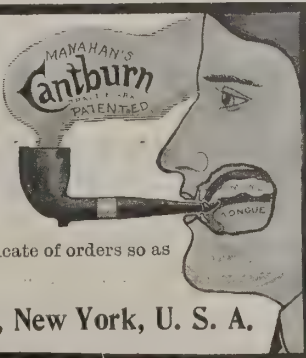
Can't burn the tongue. Always sweet, dry and clean.

Saliva can't get into the pipe, become saturated with POISONOUS NICOTINE, leak back into the mouth and give you TOBACCO HEART. No valves, absorbent piths or smoke filters used, to become filthy and spoil the flavor of your smoke, and you can smoke any tobacco.

Fine briar and hard solid rubber stem, bent or straight.

Send export orders through buying and shipping agent, and send us duplicate of orders so as to avoid mistakes. RELIABLE AGENCIES WANTED.

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Paints and Varnishes OF ALL DESCRIPTIONS

FOR
HOUSES, BARNs,
FACTORIES, FENCES,
ROOFS, BRIDGES,
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WHITE LEAD,
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ENAMELS, STAINS,
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Orders Filled Through Commission Houses.
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**AMERICAN TIME STAMP.**

Marks Time by the Quarter Hour with Easy and Positive Movement.

In use it is as simple and durable as any ordinary Rubber Hand Stamp. Simply turn the handle until the desired time is indicated on top dial; this movement turns the hand in dial on Rubber Printing Die to a corresponding time.

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or with any other wording that may be desired,

A. A. WEEKS, 11 Gold St., New York, U. S. A.

Manufacturer of Glass and Iron Inkstands and Office Stationery.

Send for Catalogue and Export Discounts.

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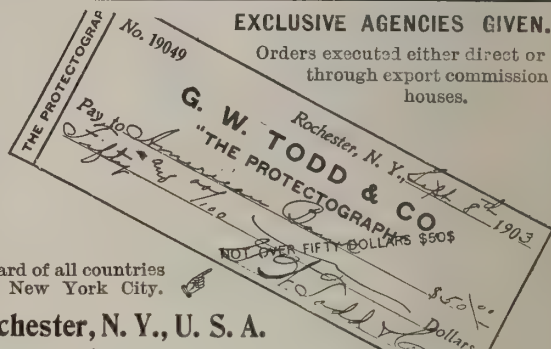
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Are now in daily use by the leading financial, industrial and mercantile institutions of America, and are exclusively employed by the United States Government.

The machine is a marvel of simplicity, being but six inches square and weighing only ten pounds, boxed ready for shipment. One movement of the lever indents the limiting line upon any preferred part of the check (see reduced facsimile of check) and by its system of compound levers forces an especially prepared indelible ink into the fiber of the paper, making it a part of the document itself and rendering its removal impossible.

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We have made nothing but this **Steel Wire Shelf Bracket** during the past eleven years. We have learned how to make it, and are willing to sell it low. That is why our output is close on to 11,000 Brackets each day.

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ATLAS MANUFACTURING CO., New Haven, Conn., U. S. A.

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Upon receipt of **Twenty-five Dollars and Forty Cents (\$25.40)** in U. S. gold, or its equivalent we will box and deliver f. o. b. cars at New York City **Our Special Offer** as follows:

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3 Dozen Pairs.....	4 x 5	6 Dozen Pairs.....	7 x 9
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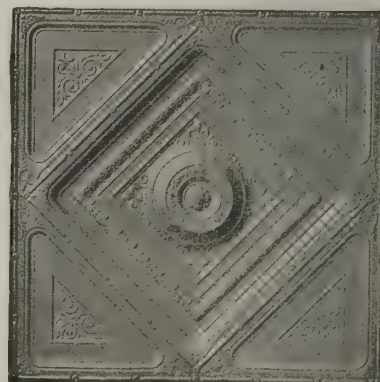
Weight, boxed ready for steamer, 200 pounds.
Size of case, 42x23x18 inches.

**Embossed Metal Ceilings and Side Walls**

are the modern fireproof interior. Highly ornamental. Will not crack, peel or fall off. More durable than plaster or plaster of Paris. "Canton" Metal Ceilings are the best metal ceilings because the construction is right. Previous experience unnecessary to erect them. Plans and working drawings showing application mailed with every order. Made in classified designs suitable for lodge halls, churches, store rooms, palaces or cottages.

THE CANTON STEEL ROOFING CO.,

Factory and Office: CANTON, OHIO, U. S. A.



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UNITED STATES WASHING MACHINE CO.,

Successors to INTERNATIONAL MFG. CO.,

—MANUFACTURERS OF—

GALVANIZED STEEL WASHING MACHINES

Made of galvanized steel, is absolutely germ-proof, and is the only washing machine made that is perfectly sanitary, and that is not affected by climatic changes.

FOR FOREIGN MARKETS ONLY.—Upon receipt of **\$11.00** in U. S. gold or its equivalent, we will crate (K. D.), ready for transportation abroad, and delivered f. o. b. New York, **2 United States Galvanized Steel Washing Machines.** Each machine occupies six cubic feet, and weighs seventy-two pounds.

Orders received direct or through export commission houses. When ordering through the latter, please specify "UNITED STATES."

UNITED STATES WASHING MACHINE CO., Racine, Wisconsin, U. S. A.



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CORKSCREWS

FOR EXPORT.

OVER 75 VARIETIES.

GOODS DELIVERED F. O. B. STEAMER.

Order through your Exporter.

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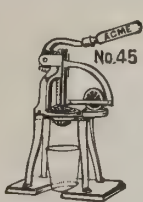
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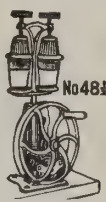
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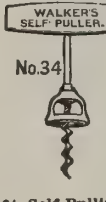
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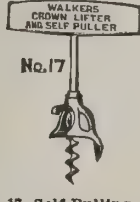
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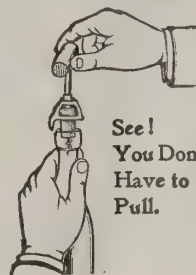
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No. 34



No. 17

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You Don't
Have to
Pull.48. Imperial
Shaker.Any
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Exporter
will buy
and
forward
these
goods.**ERIE SPECIALTY CO., Erie, Pa., U. S. A., Manufacturers for Export.****THE NEWARK LEATHER WASHER MFG. CO., NEWARK, N. J., U. S. A.**

MANUFACTURERS AND EXPORTERS OF

Solid Sole Leather Washers.

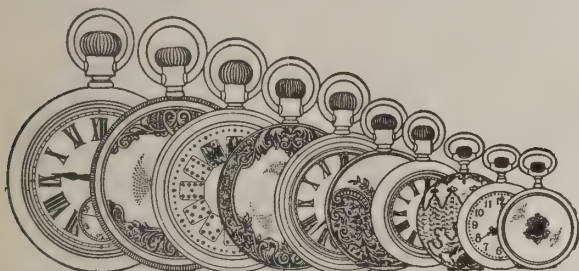
Axle Washers for All Foreign and Domestic Axles.

All Kinds of Plumbers' and Special Washers.

Orders Filled Through Commission Houses.

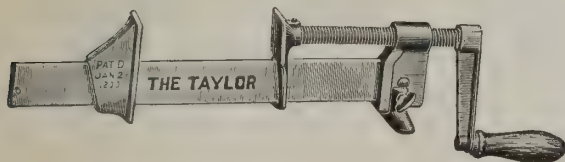
Correspondence Solicited.

Catalogue B on Application.

*New England* Watches

have a world-wide reputation and are made to suit all sorts and conditions of people.

Export Catalogue in English, French or Spanish sent on application.

THE NEW ENGLAND WATCH CO., - Waterbury, Conn., U. S. A.

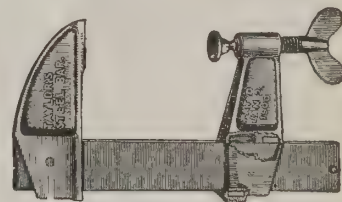
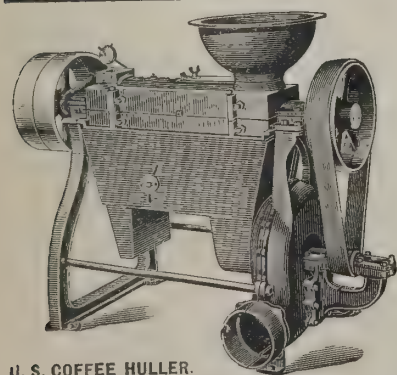
N. B.—The steel used exclusively in these Clamps is of a special high grade, testing more than double the strength of Bessemer steel for clamping purposes.

JAMES L. TAYLOR

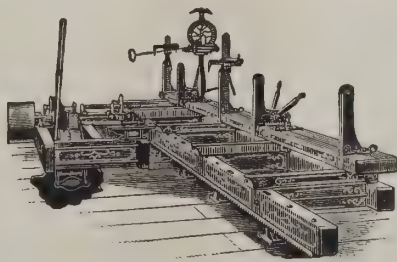
MANUFACTURER AND EXPORTER OF

THE TAYLOR QUICK-ADJUSTING SELF-LOCKING**Screw Clamps**

Tested and adopted by the United States Navy Yards and leading concerns in the United States and foreign countries. Orders filled through commission houses. Address

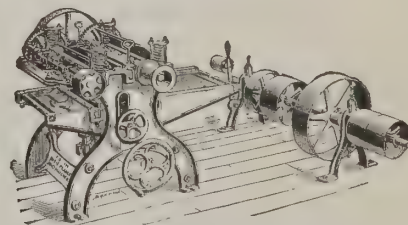
Correspondence solicited.
Catalogue No. 5A on application.**James L. Taylor,
NEWARK, N. J., U. S. A.**

U. S. COFFEE HULLER.



CIRCULAR SAW MILL.

We build a complete line of Machinery for Handling the Coffee Crop, also Large and Small Saw Mills to suit all conditions, and Wood-working Machinery. Write for Catalogue, Spanish or English.

NEW YORK Office, 2 & 4 Stone Street.
P. AUBECK, Mgr.**SALEM IRON WORKS,**Department
"B."**Winston-Salem, N. C., U. S. A.**

20-INCH DIXIE PLANER AND MATCHER.

For dressing and tonguing and grooving lumber, such as siding, flooring, ceiling, etc.

GOULD'S STEAM AND WATER PACKING.

ORIGINAL RING PACKING.

Patented June 1, 1880.—The Original Ring Packing.

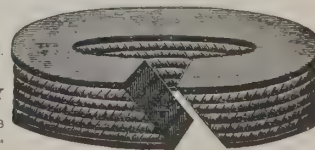
IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM
SELF-LUBRICATING, STEAM AND WATER TIGHT.

Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.

N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

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ALBION CHIPMAN, TREAS.



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THE FAMOUS D. R. BARTON PLANES AND EDGE TOOLS



For Carpenters, Coopers, Wagon and Carriage Makers, Ship Builders, Wood Carvers, Butchers, Etc.

Not equalled by any other tools made in America. None better made anywhere in the world Specified in United States Government regulations. Send for Catalogue.

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For descriptive circulars address

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ST. LOUIS, MO., U. S. A.

Palmer Gasoline Engines and Launches.

Over 9000 in Successful Operation.

PRICES FOR EXPORT ONLY:

1½ H. P. Two-Cycle Marine Engine	\$ 75.00
3 " " " " " "	90.00
5 " " " " " "	150.00
7 " " " " " "	175.00

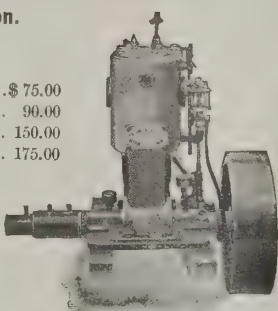
Four-Cycle Motors from 3 to 32 H. P. each.

Automobile Motors and Complete Launches.

Send for Catalogue.

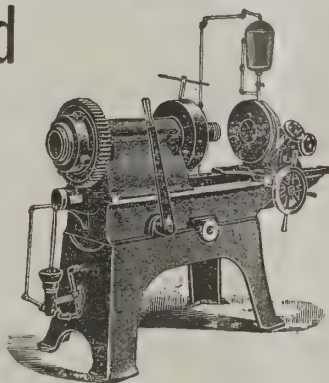
PALMER BROS.

COS COB, CONN., U. S. A.



Built to Meet a Need

for a pipe-threading machine, to handle such work expeditiously and accurately. Built with a knowledge of what these needs have been and built to meet them squarely and fully. The machine here shown is our No. 3. It handles pipe from 1½" to 6". We make four other sizes that handle work from ¼" to 12". These machines have quick-opening, adjustable dies and such other features as tend to make them just right. Also manufacturers of Special Tools. Write for Catalogue.



Williams Tool Co. ERIE, PA.

Manitowoc Aluminum Novelty Co.,

MANUFACTURERS OF

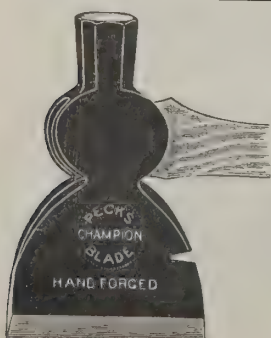
ALUMINUM COMBS AND ADVERTISING NOVELTIES.



OUR ALUMINUM COMBS are properly made, with thoroughly rounded, tapered and polished teeth, and are unsurpassed for UTILITY, BEAUTY, CLEANLINESS and DURABILITY. NON-TARNISHABLE and SANITARY. Our Combs are made from PURE NICKEL-ALUMINUM, and NOT from cheap alloys, some of which are now on the market.

SPECIAL EXPORT OFFER: Upon receipt of Twenty-five Dollars (\$25.00) in United States gold, or its equivalent, we will box, ready for steamer, and deliver F. O. B. cars at New York City, three gross (482) assorted Manitowoc Aluminum Combs. Assortment consists of ten numbers of the most staple Pocket, Dressing and Fine Combs. Weight, boxed, twenty-five pounds. Box measurement, 16x12x10 inches. For Five Dollars (\$5.00) additional we will send an assortment (one each) of selected samples of other Aluminum Goods, including advertising souvenirs. Weight, fifteen pounds. Box measures 10x10x4 inches. The two assortments, packed in one box, weight thirty-five pounds. Box measures 20x12x10 inches. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us a duplicate of the order. Illustrated catalogue, with price list, sent with each shipment.

MANITOWOC ALUMINUM NOVELTY CO., Manitowoc, Wis., U. S. A.



Quality Counts.

Merit Wins.

PECK'S HATCHETS and AXES.

All Hand Forged.
Fully Guaranteed.

PECK EDGE TOOL CO.,

Cohoes, N. Y., U. S. A.

Write for Catalogue and Prices.

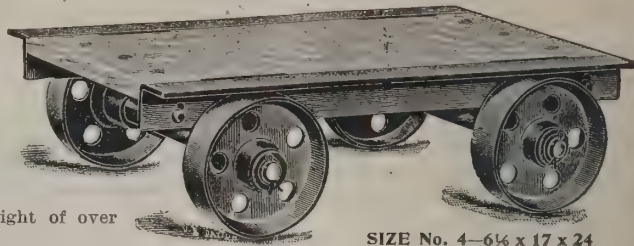
CITY FORGE & IRON WORKS, Dayton, Ohio, U. S. A.

GEM BOX TRUCK. Made of Steel and Cast Iron.

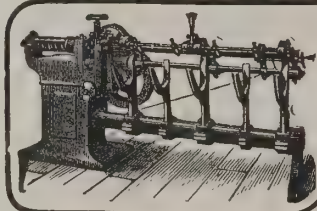
Special Export Offer—Six trucks, packed for export and delivered, f. o. b. cars New York, for \$36.00 net.

Size of crate with six trucks, 20 x 26 x 40 in.; with one truck, 20x26x8 in. Net weight, 50 lbs.

The truck shown in the illustration will carry a weight of over 2,000 lbs.



SIZE No. 4—6½ x 17 x 24



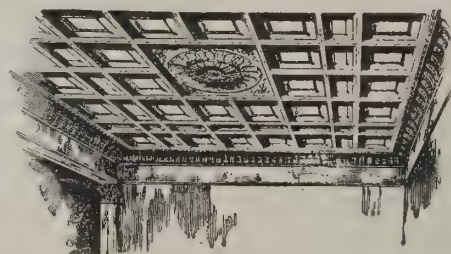
Our Automatic Wire Straightening and Cutting Machine

Straightens and cuts accurately every minute from 60 to 180 feet of wire, any desired length, directly from the coil.

If your work requires riveting a number of rivets, or drilling a number of holes, you should send for our Booklet telling of the special labor-saving machines we make.

THE F. B. SHUSTER CO., Formerly John Adt & Son, New Haven, Conn., U.S.A.

NORTHROP'S Stamped Metal Ceilings,



In Soft Sheet Steel,
For All Buildings.

Highest Prize Paris
Exposition, 1900.

Send for Catalogue. Give diagram of the room for an estimate.

Northrop, Coburn and Dodge Co.,
40 Cherry St., New York, U.S.A.



METAL CEILINGS.

We are constantly improving and adding to our line. Have you our catalogue?

We Are Manufacturers of Sheet-Metal Goods "from Start to Finish."

WHEELING CORRUGATING CO., 47-51 Cliff St., New York, U. S. A.

THE SANITARY COFFEE MAKER.

GOOD COFFEE WITHOUT EGGS OR SACK. Made of pure finely perforated aluminum.

Will not taint or tarnish. Will fit any Coffee Pot. The quickest seller of any Household Article upon the market, and should be in every house throughout the civilized globe.

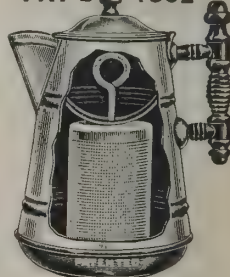


Sanitary Coffee Maker.

THE WISCONSIN MFG. CO., Manitowoc, Wis., U. S. A.

OVER HALF A MILLION IN USE THROUGHOUT THE U. S. A.

PAT'D 1902



Sanitary Coffee Maker within Coffee Pot.

FOR EXPORTATION ONLY. Upon receipt of Thirty-seven and 50-100 Dollars (\$37.50) in U. S. gold, or its equivalent, we will box ready for steamer and deliver F. O. B. cars New York, one hundred (100) SANITARY COFFEE MAKERS as follows: Fifty Style No. 2, capacity seven cups of coffee, Fifty Style No. 3, capacity fifteen cups of coffee, Fifty Style No. 2 retails in the U. S. at fifty cents each; Style No. 3 at seventy-five cents each. Size of box containing one hundred Sanitary Coffee Makers, 20x28x35 inches, weight fifty pounds. Each Sanitary Coffee Maker is packed in an individual paper box, suitable for mailing. The Sanitary Coffee Maker will fit any coffee pot. We also make large sizes of the Sanitary Coffee Maker (two to fifteen gallons capacity) for hotels, clubs and restaurants.



The Columbus Meter Seal insures absolute protection. Impossible to tamper with the meter without breaking the seal—then the jig is up. Write for particulars.

COLUMBUS METER SEAL COMPANY,
COLUMBUS, OHIO, U. S. A.

STOP THIEF!

NO MORE STOLEN GAS OR WATER.

TROWBRIDGE CHOCOLATE CHIP CO.,

MANUFACTURERS AND EXPORTERS OF

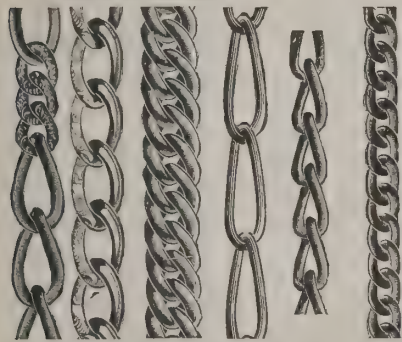
ORIGINAL CHOCOLATE CHIPS.

Most dainty eating confection in the world. Crisp and delicious.

Orders filled through commission houses. Correspondence solicited. Send for Circular A.

BOSTON, MASS., U. S. A.**T. B. Clark & Co., Inc.**

Manufacturers of

RICH CUT GLASS**Honesdale, Pa., U. S. A.**No. 400. No. 264. No. 6 1/4. No. 51. No. 514. No. 11.
Fine rolled plate, warranted 6 years.**HENRY WILLIAMS & SON,**

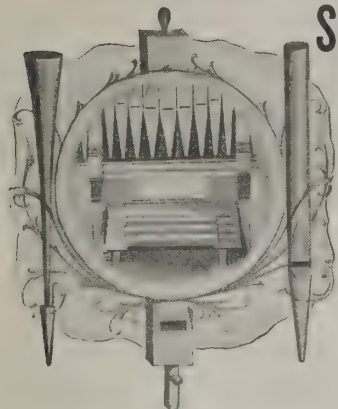
PROVIDENCE, R. I., U. S. A.

Manufacturers and Exporters of

Fine Rolled-Plate and Seamless Wire Chains, Neck Chains, Bracelets and Lorgnette Chains.

Orders filled through commission houses. Correspondence solicited.

No. 400.	\$10.00	a doz. net., f. o. b. New York
No. 264.	11.00	" " " "
No. 6 1/4.	9.00	" " " "
No. 51.	7.00	" " " "
No. 514.	7.25	" " " "
No. 11.	8.50	" " " "

**Samuel Pierce Organ Pipe Co.**

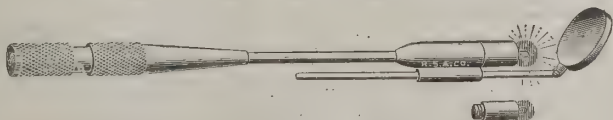
Manufacturers and Exporters of

Metal and Wood Organ Pipes AND ORGAN MATERIALS.

SPECIALTIES: Decorating Front, Pipes, Voicing Flue and Reed Pipes.

The Oldest Organ Pipe Manufacturers in the United States.

Correspondence solicited. Catalogue "D" on application.

SAMUEL PIERCE ORGAN PIPE CO.,
READING, MASS., U. S. A.

No Physician's Office Equipment Is Complete Without Some of Our

Diagnostic Instruments,With **COLD LAMPS.**

Send for Catalogue A.

Rochester Surgical Appliance Co., 17 ELM STREET
ROCHESTER, N. Y.**The National Emery Wheel Company****WORCESTER, MASS., U. S. A.**

MANUFACTURERS OF

Emery and Corundum Wheels,

AND ALL KINDS OF

Emery Wheel Machinery, Emery, Corundum, Etc.
Thin Elastic Wheels a Specialty.

Orders received through commission houses. Correspondence solicited.

**Union Computing Machine Company,**

3 Union Square West, N. Y., U. S. A.

Cable Address: "Computico, N. Y."

Manufacturers of

Union Cash Registers

Discounts on Application. Made for the Moneys of All Nations.

LATEST MODEL KEY-OPERATING
* **CHECK AND STRIP PRINTING** *

Shipping weight, net, 98 lbs. (44 kil.); gross, 150 lbs. (68 kil.); 6.1 cu. ft. (172 cu. met.). Order direct or through any reliable exporter.

**The "RELIANCE" Price, \$5.**
Automatic Numbering MachineDiscount, 30 Per Cent. in Lots of 1 Doz.
(Six Wheels) Numbers from 1 to 1,000,000This machine is **automatic** throughout. It can be set to print numbers consecutively—print a series in duplicate—or repeat any number indefinitely.

No rubber used in the construction, and every machine is sold with our guarantee. Style of imprint:—

123456**CUSHMAN & DENISON MFG. CO.**
240-242 West 23d Street, New York**BOSTON FLOOR COMPANY,****BOSTON, MASS., U. S. A.**

MANUFACTURERS AND EXPORTERS OF

Parquet Floors and Floor Finishes

—ALSO—

Floor Wax, Powdered Wax, Wax Oil for Kitchen Floors, Surface Renovator and Weighted Polishing Brushes.

Orders filled through commission houses.

Correspondence solicited.

The Glow Night Lamp.

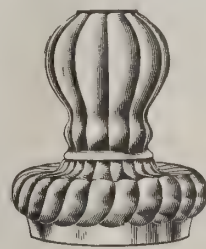
A SCIENTIFIC WONDER

200 HOURS' LIGHT FOR ONE CENT.

Makes and consumes its own gas, generated from kerosene oil. The only lamp using a glass burner.

Absolutely Safe and Free from Smoke or Odor.

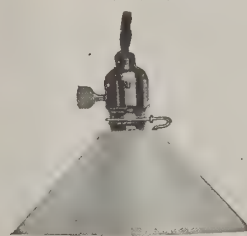
Catalogue and Price List sent on application. Patented in the United States, Gt. Britain, France and Austria.



Style 1.



Style 2.

THE GLOW NIGHT LAMP CO., Incorp., 73-75 PEARL ST., Boston, Mass, U.S.A.**"FOR THOSE WHO WANT THE BEST."**

Fiberlite Shade and Holder.

Shade made from fiber similar to that used for lining sockets. Mottled green on outside and pearl gray inside. Fiber finished under pressure which gives it a gloss finish, furnishing fine reflection for light. So tough that edges will not break and so springy that it cannot crush. Holder of heavy wire; one piece, clamps to socket with a catch. One catch and no screws. Fastens to inside of shade and any tendency to pull off only makes it hold more securely.

Light as aluminum shades, which means cheap freight rates.

TO INTRODUCE ABROAD:

Upon receipt of \$40.00 in U.S. gold or its equivalent, we will box and deliver f. o. b. cars at New York, five gross of these shades in assorted sizes.

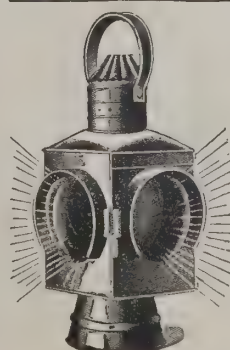
APPLIED DEVICE COMPANY, Springfield, Mass., U. S. A.**PETER GRAY & SONS,**

88-90 Union Street, Boston, Mass., U. S. A.

MANUFACTURERS OF

Railroad, Ship, Street and Square Lanterns.**Heavy Tinware for Railroads,**
Oil Cans of every description.
Locomotive Gauge Lights.

Orders filled through commission houses. Correspondence solicited. Catalogue "G" on application.



The VAN BIBBER ROLLER CO.

CINCINNATI,
OHIO, U. S. A.

VAN BIBBER'S "ROUGH AND READY" ("El Tosco y Listo").

PRINTERS' ROLLERS

For ANY climate, hot or cold, can be made at once by any printer. You can make the best rollers, as hard or as soft as you please. No roller can be better. "Rough and Ready" does not spoil from age. English and Spanish directions. Price, 35c. List per pound, 77c. List per kilo, f. o. b. New York. Being an unfinished composition, the rollers when made cost less than this. Send to us for pamphlet. Used since 1878. We are manufacturers who sell at first hand and invite correspondence from prominent foreign dealers, to whom we offer special inducements; or, if you prefer, order through Amsinck & Co., American Trading Co. or any other responsible New York exporter.

Printers' Roller Composition."They Sound Different" For Violin, Guitar, Mandolin,
Banjo, Harps, Etc.
BELL BRAND
STEEL and WOUND
Musical Strings.

Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.

NATIONAL MUSICAL STRING CO.,
New Brunswick, N. J., U. S. A.
A. W. BRIM

Manufacturer and Exporter of

E Lead Composition and Brass E
Pattern Letters and Figures

FOR FOUNDRY MEN AND PATTERN MAKERS.

Orders filled promptly and directly from factory. Correspondence solicited. Prices f. o. b. New York City. Catalogue "B" on application.

SENECA FALLS, N. Y., U. S. A.**NOTICE TO****Foreign Commission Brokers and Correspondents.**

We would like to communicate with reliable brokers with the view to securing their services to represent us in the sale of stock in a meritorious company.

Bank references on application.

Address all communications to the

DELAWARE OIL, GAS and DEVELOPMENT CO.,
Calvert Building, Baltimore, Md., U. S. A.
O-HI-O COOKER & OIL STOVE CO.,

656-660 JEFFERSON AVENUE, TOLEDO, OHIO, U. S. A.

Good, Economical Cooking.

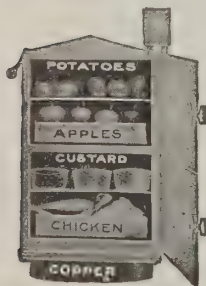
We can save you the services of a cook or make a good cook out of a poor one. Saves you 50 per cent. in fuel, labor and time. Insures you deliciously cooked, easily digested, never spoiled, steaming hot meals, all cooked over one burner.

GRAND FOR CANNING FRUIT.

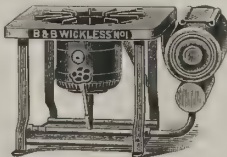
Orders Promptly Filled Direct or Through N. Y. Commission Houses.

In latter case, send us duplicate order to avoid errors. Agencies Wanted in All Trade Centers of the World.

We manufacture a full line of **OIL STOVES** that make a good seller in connection with cookers. Write for Catalogue and Discount.



\$3.50 up.



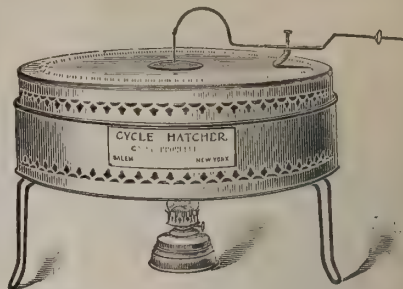
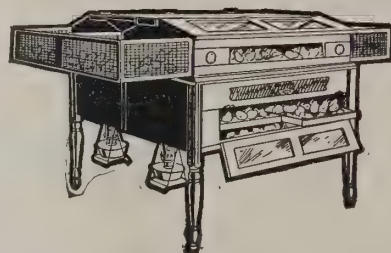
\$4.30 up.

TANITE
**GRINDING
MACHINES.
EMERY
WHEELS.
EMERY.**
The Tanite Co., Stroudsburg, Penna., U. S. A.

You can buy to advantage through any American Export House—preferably in New York City.

A HATCHING WONDER

The new **CYCLE HATCHER**. An entirely novel method of hatching and brooding chicks. Requires only the self-supplied moisture of the egg itself. No egg-tray doors to open. Regulation automatic and exact. Holds from 50 to 10,000 and can be set with 50 or more eggs per day, making it unnecessary to fill entire machine at starting. Eggs cooled without removal from machine. Will hatch hens, ducks, geese and turkey eggs equally well at the same time. Made entirely of metal and asbestos. Is fire-proof and will not warp, swell, shrink or crack. 50-egg size, 7 x 17½ inches; weight, 12 lbs. Net price, \$5.00. For full particulars address

**CYCLE HATCHER CO., Salem, N. Y., U. S. A.****OUT-HATCHES ITS COMPETITORS!**

Why does the Reliable Incubator give such remarkable results—hatching 85, 90, 95 per cent. of the fertile eggs? Because our heating, regulating and ventilating systems give pure, vitalizing oxygen to germ and growing chicks. Other reasons why the Reliable is a profit-bringer are its durability, and economy of time and material. It has double top and bottom, made of best kiln-dried lumber, so treated as not to absorb moisture.

Reliable Incubators

have trays so constructed that it's easy to reach either eggs or chicks. Remember, too, that the Reliable out-hatches its competitors so often because the heat in corner or center is always the same temperature—a mellow, even heat in every cubic inch of the egg chamber. Our new catalogue is free. It tells a lively story giving warnings, and simple, yet full instructions on hatching and raising poultry successfully. Just send 10 cents to pay postage

RELIABLE INCUBATOR & BROODER CO., Box A 000, Quincy, Ills., U. S. A.**Gem Incubators**

Are low in price, but this does not mean that they are cheaply made, or that they are inferior in any way. In fact, they are high grade in every particular and have several important features not to be found in any other hatcher.

Prices reasonable. Results guaranteed. Send for beautiful illustrated catalogue, mentioning this paper. Reliable agents wanted. Address

GEM INCUBATOR CO.,
Box A1, Dayton, Ohio, U. S. A.
200-Egg Incubator for \$12.80

The simplicity of the Stahl Incubators created a demand that forced the production to such great proportions it is now possible to offer a first-class 200-egg incubator for \$12.80. This new incubator is an enlargement of the famous

WOODEN HEN

recognized the most perfect small hatcher. This new incubator is thoroughly well made; is a marvel of simplicity, and so perfect in its working that it hatches every fertile egg. Write for anything you want to know about incubators. Send for the new free illustrated catalogue.

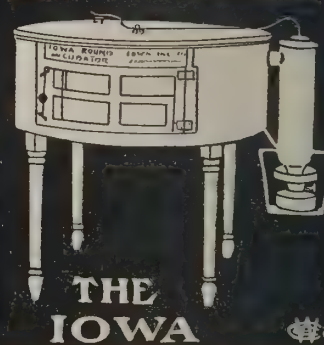
GEO. H. STAHL, Quincy, Ill., U. S. A.**355 Eggs
354 Chicks**

That's the result Mr. Geo. McDowell, Chemung Center, N. Y., obtained with an

IOWA ROUND INCUBATOR

The incubator that rounds out the largest number of chicks per hatch every time. If you are sure of your eggs you can rest assured of the same number of chicks—strong and healthy—with the Iowa Incubator. Catalogue and prices free on request.

Iowa Incubator Co., Box 140, Des Moines, Iowa

**THE
IOWA****There Is Only ONE ALBANY GREASE**

This Trademark on every package.

And we are the only Makers.

Have you seen Albany Grease? How many know its worth? Cost of using Oil.

Cost of using Albany Grease.

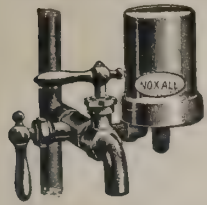
Albany Grease is the only safe lubricant for electrical machinery of all kinds and is used by all the large plants and every street railway in the U. S. A. Self-acting. Where oil is used we can save you from ¼ to ½ in the cost of lubrication. Oils are advancing and it will pay to use Albany Grease at the present prices. Small 4-oz. sample free on application

To introduce abroad (only) will box ready for steamer and deliver in New York sample case of 100 lbs., containing two 10-lb. cans each Nos. 0, 1, 2, 3 and X Albany Compound at \$12 American Gold, net. Case measures 36 x 14½ x 7½; gross weight, 123 lbs. Order direct or through your Commission House.

Cable address: "OEZRIC," New York.

Look out for Yellow Label.
ADAM COOK'S SONS.

313 West Street, New York, U. S. A.



Noxall Natural Stone Water Filters.

Make all water, no matter how dirty, absolutely pure. Prevent typhoid and all zymotic diseases. Are small, compact, simple and inexpensive. All sizes and prices from \$2.50 up. For full particulars, terms, discounts, etc., write to

AMERICAN FILTER CO.
580 Montgomery Bldg., Milwaukee, U. S. A.



THE CADY MFG. CO., Auburn, N. Y., U. S. A.

Manufacturers and Exporters of

The Cady Tack Puller and Tack Hammer Combined.

Is as good and handy a tack hammer as can be made, and the best and handiest tack puller ever offered, all in one simple tool.

ALSO OTHER SPECIALTIES IN HOUSE FURNISHINGS.

Orders filled through commission houses.

Correspondence solicited.



THE EAGLE WINKER MFG. CO.

MANUFACTURERS AND EXPORTERS OF

Star Pointer Knee Boot, 20th-Century Toe Weight, Chehalis Hopples, Winkers, Fronts and Housings.

Orders Filled through Commission Houses. Correspondence Solicited. Catalogue B on Application.

NEWARK, N. J.

U. S. A.

JOSEPH MEIER'S SONS,

MANUFACTURERS AND EXPORTERS OF

PURE OAK TANNED LEATHER BELTING,

LACE LEATHER AND BELT FASTENERS.

Orders filled through commission houses.

Correspondence solicited.

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New York Office:
37 Dey Street.

NEWARK, N. J., U. S. A.



Established
1857.

JOHN J. ADAMS,

Manufacturer and Exporter of

CUTTING DIES OF EVERY DESCRIPTION FOR

Leather, Paper, Cloth and Rubber.

Orders filled through commission houses. Correspondence solicited.

83 Mechanic Street, - - - Worcester, Mass., U. S. A.



Rife Hydraulic Engine.

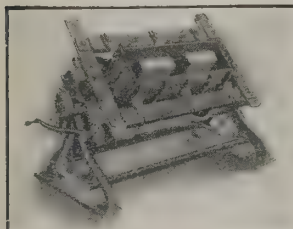
PUMPS WATER BY WATER POWER.

Irrigation with Rife engines.

Does not require any care or expense.

Water supply for towns, railroad tanks, country houses. All engines guaranteed. Catalogue free. Estimate furnished. Engines never stop. Pump water to 30 feet high for each foot of head. 4,000 engines successfully working.

RIFE ENGINE CO., 126 Liberty St., New York, U.S.A.



The WINGET CONCRETE MACHINE CO.

COLUMBUS, OHIO, U. S. A.,

MANUFACTURERS OF

The Winget Concrete Building Block Machine,

Automatic, adjustable and rocking. To admit the facing of blocks. Combining ten machines in one, for the manufacture of concrete blocks for dwellings, factories, bridges, power plants, docks, retaining walls, tunnels, subways, silos, foundations, gutter blocks, wall copings, etc., etc.

SEND FOR OUR NEW CATALOGUE.

In order to facilitate our increasing export business, we desire to establish an agency with one responsible firm in each trade centre of the world.



ROSS BROTHERS,

WORCESTER, MASS., U. S. A.

MANUFACTURERS AND EXPORTERS OF **CHICKEN FOODS,**

Wish to call the attention of foreign importers to their

"WYANDOTTE" CHICKEN FOOD, largely used in the United States by those who raise chickens either for pleasure or profit. It is a cheap, nutritious food; superior to any kind of grain or wet food for young chickens or for poultry. Send a trial order and you will become a permanent customer. Order through any responsible commission merchant. Send for Catalogue "R." Address as above.

Henry W. Peabody & Co., New York Agents for Australia and New Zealand.

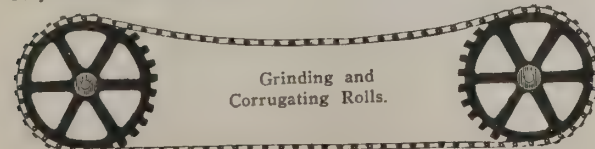


Mey Detachable Chain Belt.

The Mey Chain Belting Engineering Works,

H. F. Mayer, Prop.,

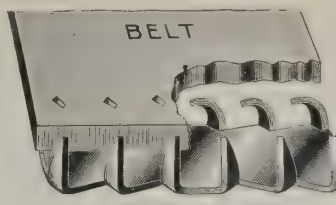
14 Perry Street, Buffalo, N. Y., U. S. A.



Grinding and Corrugating Rolls.

Manufacturer of Patent Mey Chain, Link Chain, Sprockets, Elevator Buckets, and Conveying and Elevating Machinery.

WRITE FOR CATALOGUE.



SOFT-STEEL BELT HOOKS

For High-Speed and Hard-Running Belts.

Orders Filled Through Commission Houses. Correspondence Solicited. Write for Catalogue T.

W. O. TALCOTT,

Exporter and Manufacturer of 180 Varieties of Bolt Fastenings, PROVIDENCE, R. I., U. S. A.



WANTED

Agents to sell our Whale Art Embroidery Needles, which do elegant work on any woven goods, making beautiful raised figures of birds, animals, flowers and many useful articles to ornament the home. Any person can use it and do the work ten times faster than by hand. This is one of the easiest and most rapid money-making propositions in the market. Our agents are making rapid sales and big money wherever they offer the Needles. No experience is required to make a success. We furnish the outfit and full instructions with the first dozen Needles, so our agents are at once fully qualified to begin work and are assured of a handsome income. Send for a sample dozen Needles and terms on large quantities. We send sample dozen for \$2.70. Our \$3.00 White Rabbit, Sofa Cushion and other samples of the work we furnish FREE to agents make it a pleasure to sell the Needles. **WHALE ART CO., 527 Bates St., St. Louis, Mo., U. S. A.**

PRISCILLA

Embroidery Hoops, Hoop Holders, Sets and Novelties, embracing new and novel ideas for embroidery workers. Our hoops, 4, 5, 6, 7 and 8 inches, are full 1-2 inch, made from the best hard wood; nicely finished in Tuscan bronze and expanding and contracting devices. Hoop Holders finished in Tuscan bronze and nickel-plate. Sets consist of 1 Universal Hoop Holder, 1 Special Yoke, Hoop with strap 10, 12 or 15 inches.

PRISCILLA COMPOUND is the only suitable preparation for washing art embroideries and fine fabrics. Send for catalogue and price-list. Manufactured by

THE LEADER MFG. CO., Hartford, Conn., U. S. A.



Rings that are Guaranteed to give wearer Satisfaction

MADE OF ROLLED-GOLD SEAMLESS WIRE.



In order to introduce our lines we are prepared to send an assortment of our samples, 48 styles of our rings for \$10.00, U. S. Currency, which will give an idea of the excellent quality of our manufacture. Catalogue and price list on application. Orders executed direct or through any export commission house.

THE R. L. GRIFFITH & SON CO., Providence, R. I., U. S. A. Established 1879



Steel Advertising Novelties

Button Hooks, Shoe Lifts, Letter Openers, Key Rings, Etc.

Only factory of its kind in the United States. Orders filled through commission houses. Correspondence solicited. Send for Catalogue "A."

J. L. Sommer, NEWARK, N. J., U. S. A.

Mack's Delicious Soda-Water Powders.

Made by Simply Adding to a Glass of Water.

All Flavors, Packed in Small Wooden Boxes. Retail at 1 Cent Each.

A SODA FOUNTAIN IN YOUR OWN HOME.

Address **W. R. EATON COMPANY, Boston, Mass., U. S. A.**



"Brown's Bronchial Troches"

A WORLD-RENOUNDED REMEDY

For Coughs, Colds, Bronchitis, Asthma, Catarrh, the Hacking Cough in Consumption, and numerous affections of the Throat, giving immediate relief. They have received the sanction of physicians generally and testimonials from eminent men throughout the world. All dealers in medicines and proprietary goods can recommend them with confidence. Caution.—"Brown's Bronchial Troches" are sold only in boxes or bottles, with facsimile of the proprietors on outside wrapper of the package.

JOHN I. BROWN & SON, Proprietors, Boston, Mass., U. S. A., and London, England.

Send your orders to

DOCTOR HARRISON PAIN CURER CO.,

PROVIDENCE, R. I., U. S. A.

Manufacturers and Exporters of Harrison's Pain Curer—an Instant Reliever. Also Manufacturers of Infant Syrup—the Nurse's Treasure; Nervina—the Nerve Strengthening; Malaria Specific—cures La Grippe and Malaria; Special Antidote—for Kidney Complaints; Soothing Balm—for Coughs, Croup and Asthma; Magnetic Healer—Skin Beautifier and Healer; Herbal Discovery—Great Blood Purifier, and all kinds of Cooking and Medicinal Extracts for family use. Orders filled through commission houses. Correspondence solicited. Catalogue H on application.

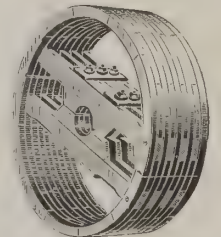
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are from 40 to 75 per cent. lighter than iron pulleys, and will transmit from 25 to 65 per cent. more power than any iron or steel pulley. The "Paul Pulleys" are the strongest, lightest, handsomest, quickest adjusted and truest running WOOD PULLEYS in the world.

Our illustrated price-list mailed postpaid, and prices quoted f. o. b. New York, Boston or Baltimore.

PAUL MANUFACTURING CO.,

FORT WAYNE, INDIANA, U. S. A.



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It is *impartial* because it treats all its patrons alike. It cannot, for this reason, and it does not, publish write-ups or puffs of any specific make of goods, no matter whether advertised in it or not. It charges the same price for the same services to all alike.

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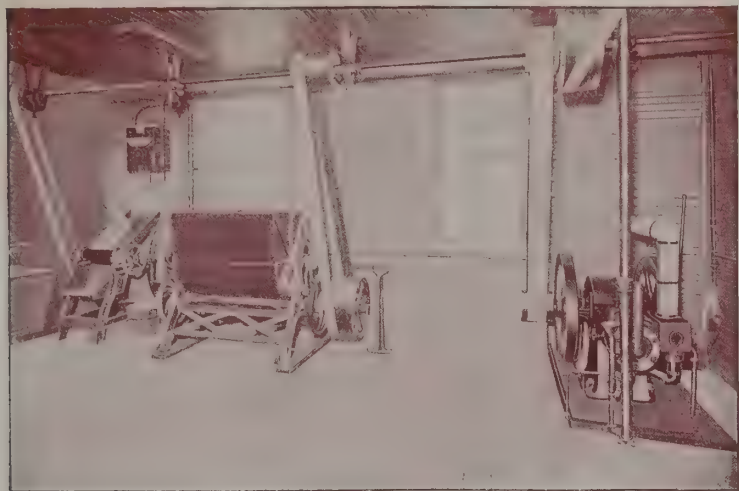
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THE JOHN C. COCHRAN CO.

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Popularity ^{WON} _{ON} Merit.

This explains the demand for our Baker's Machinery in foreign countries.

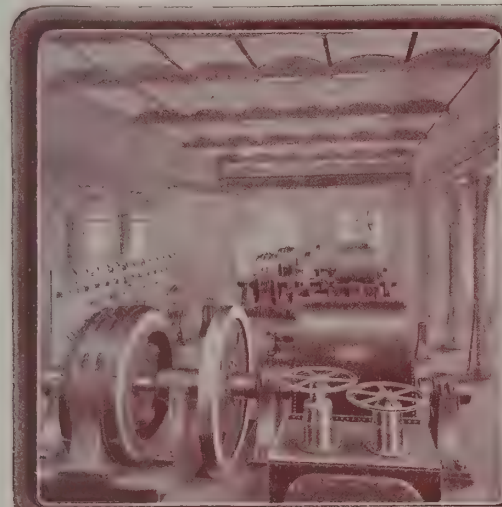
IMITATED, BUT NOT EQUALED.

First-class in material and workmanship—just as represented.

OUR GUARANTEE GOES WITH EVERY ORDER.

We make Cake Machines, Cracker Machines, Dough Mixers, Brakes, Etc. Send for our new catalogue.

The J. W. Ruger Mfg. Co., **BUFFALO, NEW YORK, U. S. A.**



PELTON WATER WHEELS

PIKES PEAK POWER CO.

The illustration herein shown is that of Pikes Peak Power Co.'s Hydro-Electric Transmission Plant, located near Victor, Colorado. It consists of three 1,000-horsepower Pelton Wheels, operating under 1,180-foot head and direct-connected to electric generator.

This electric power is supplied to the many mines, mills and other industries in that vicinity. This plant has been running day and night for four years at practically no expense for repairs. Send for catalog illustrating many other plants of similar character.

PELTON WATER WHEEL CO.

150 Liberty Street, New York.

128 Main Street, San Francisco.

75% OF YOUR PAINT BILLS SAVED BY THE USE OF OUR PAINTING MACHINES AND READY=MIXED COLD=WATER PAINTS

Read the following from one of the largest painting contracting firms in the United States:

St. Louis, Mo., January 30, 1904.

THE HOOK-HARDIE COMPANY, Hudson, Mich.:

Gentlemen—In reply to your letter of the 25th inst., our contracts on the buildings of the LOUISIANA PURCHASE EXPOSITION amount to something over 12,000,000 SQUARE FEET, all of which is practically completed at this writing, and at least 95 PER CENT. OF THIS WORK WAS DONE WITH THE MACHINES WE BOUGHT FROM YOU. We examined all of the machines on the market and tested quite a few, finally deciding on your machine and one made by another firm. Shortly after starting work we dropped the other machine entirely on account of the large amount of time lost by the machine getting out of order. We also ran two lines of hose from your machine without increasing the number of men on the pump, something we could not do with any of the other machines, thus increasing the efficiency of both machine and men employed 100 per cent.

WE TAKE PLEASURE IN STATING THAT, IN OUR ESTIMATION, YOUR MACHINE IS FAR SUPERIOR TO ANYTHING ON THE MARKET.

THE COLD-WATER PAINT USED AMOUNTED TO ALMOST 400,000 POUNDS.

Respectfully yours,
BUILDERS' CONTRACTING COMPANY.



No. 3 "Rapid" Painting Machine.

Our Ready=Mixed Paints

are made from pure minerals, ground with a liquid chemical into a thick paste, which only requires the addition of water to be ready for instant use.

Our Ready-Mixed Paints are

**WASHABLE,
WEATHER-PROOF,
FIRE-PROOF,
SANITARY**

and Cost but One-Tenth (1-10) as Much as Oil Paint.

Made in WHITE and a variety of colors.

Packed in strong, iron-hooped barrels, half-barrels and kegs.

Our booklet, entitled "Your Painting Bills Made Smaller," contains valuable information concerning Paint and Painting Machines, a copy of which will be mailed postpaid to any part of the world.

THE HOOK-HARDIE CO., **MANUFACTURERS,** **Hudson, Mich., U.S.A.**
Cable Address, "Besthook," W. U. Code.

BARBAROSSA

is the most
exquisite
Bottled
Beer
in the
World



Moerlein's
Bottled Beers
are
the model for
Purity and Healthfulness
THE
CHRISTIAN MOERLEIN BREWING CO.
CINCINNATI, OHIO.

The "New American"

IS THE

Turbine for Export.

Why?

Strength, durability and interchangeable parts reduce repairs to a minimum.

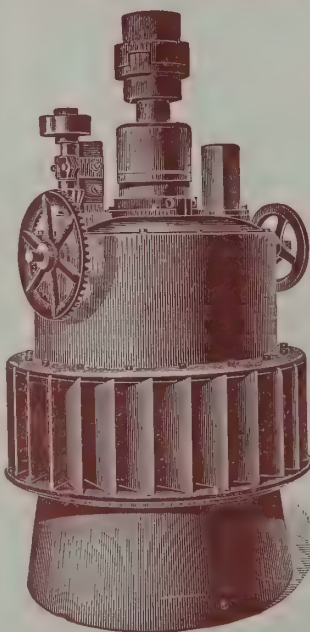
Great power for the diameter.
Economy in use of water.

Vertical or Horizontal Installations
to meet requirements.

Our Catalogue, which will be mailed on request, furnishes detailed description.
We also manufacture Gas and Gasoline Engines, Paper and Pulp Mill Machinery, and a full line of Power Transmission Machinery.

**THE DAYTON GLOBE
IRON WORKS CO.,**

DAYTON, OHIO, U. S. A.



We Make the Largest Line of SAW MILL MACHINERY in the World.

The Greatest Lumber Maker Is the Circular Mill.

THE BEST CIRCULAR IS THE

LANE'S PATENT LEVER SET.

HIGHEST AWARD—Gold Medal at the South Carolina Interstate and West Indian Exposition.

Adapted to all kinds, sizes and lengths of logs; any size from 3,000 feet up daily capacity; single or double, right or left hand.



No. 3 MILL.
Can furnish with Heavy Friction Feed for Water Mills, also with Steel Trucks on Steel Axes extending across the Carriage and Steel Rail Track, instead of Chairs and Rails and Center Guide, if preferred.
Right or Left Hand, Single or Double.

LANE MANUFACTURING CO.,
MONTPELIER, VERMONT, U. S. A.



We also manufacture Saw-Mill Set Works, Dogging Devices, Etc., Water Wheels, Log Jacks, Cutters and Nippers, Dags, Saws and Friction Feed Cutting-Off Saws, Live and Dead Rolls, Edgers, Trimmers, Cutting-Off Tables, Lath, Shingle and Lapboard Machines, Planers and Matchers, Transmission Machinery and the Anderson Patent Traveling Cranes.
Circulars and Prices on Application.
Specify "LANE," and when ordering, to avoid errors, please mail us a duplicate of order.

The American Exporter

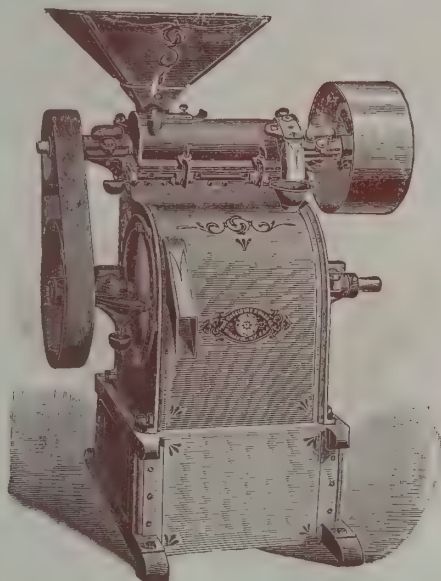
WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIV.

NEW YORK, SEPTEMBER, 1904.

No. 4.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

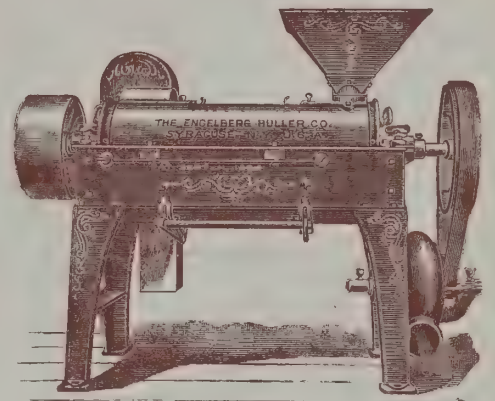


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the **Only** machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.



Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

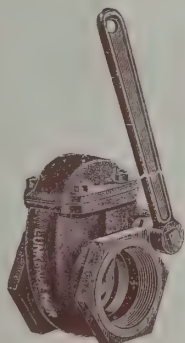
THE ENGELBERG HULLER COMPANY, P. O. Box B,
Syracuse, N. Y., U. S. A.
Export Office: 333 Produce Exchange, New York City.

LUNKENHEIMER Handy Gate and Lever Throttle VALVES

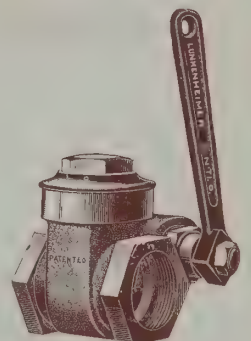
**ARE UNEQUALLED IN PLACES WHERE RELIABLE,
QUICK-ACTING VALVES ARE REQUIRED.**

The Handy is intended for pressures not exceeding 75 pounds, and made in sizes ranging from ½ to 4 inches in brass; 2 inches to 8 inches in iron, brass mounted; 1 inch to 8 inches in all iron. The Lever Throttle Valve is intended for 175 pounds pressure, and is made in brass ¾ to 2½ inches; iron body, brass mounted, 2½ to 6 inches. These valves are made only in screw ends. Simple, practical, durable. Every valve subjected to rigid test and inspection before shipment. Specify "Lunkenheimer Make" and order from your export agent.

**WRITE FOR CATALOGUE OF BRASS AND IRON STEAM SPECIALTIES
AND ENGINEERING APPLIANCES OF SUPERIOR QUALITY.**



HANDY.



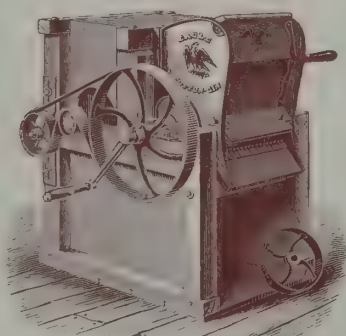
LEVER THROTTLE.

THE LUNKENHEIMER COMPANY, SOLE MAKERS, Cincinnati, O., U. S. A.
BRANCHES: 26 Cortlandt Street, New York; 35 Great Dover Street, S. E., London.

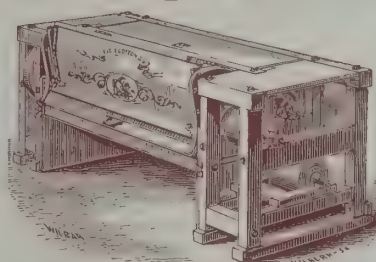
EAGLE COTTON GINS.

These Gins enjoy a **BETTER REPUTATION** THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are **PREFERRED** to all others made, on account of their **STRENGTH, SIMPLICITY, DURABILITY,** the amount and **EXCELLENCE** of the work they accomplish, and the **RAPIDITY** of their operation.

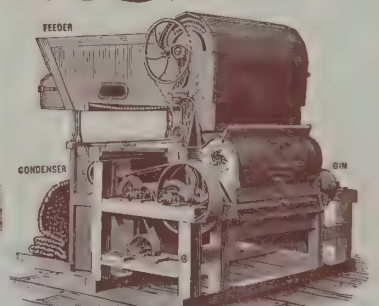
For further details illustrated Catalogues will be furnished on application.



Hand Gin.



Power Gin with 12-inch Saws



Power Gin with 10-inch Saws, with Feeder and Condenser.

CONTINENTAL GIN CO., Inc., Successors to **EAGLE COTTON GIN CO.,**
BRIDGEWATER, MASS., U. S. A.

Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

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OF
IMITATIONS

NOTICE
SCRIPT NAME
OF
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ON LABEL,
AND GET
THE GENUINE
HARTSHORN

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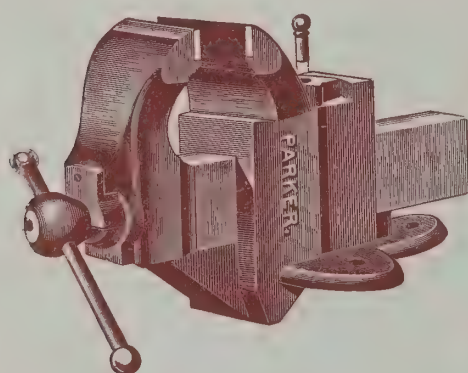
Sold All Over the World. Order through your Commission Men.

STEWART HARTSHORN CO.

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Stockroom: No. 7 Lafayette Place, New York.



THE Parker Vise

Unequaled for Strength, Durability and Finish.

Has stood the test of over 50 YEARS.

EVERY VISE MADE FOR SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over 60 YEARS and will stand comparison with any Mill in the market.

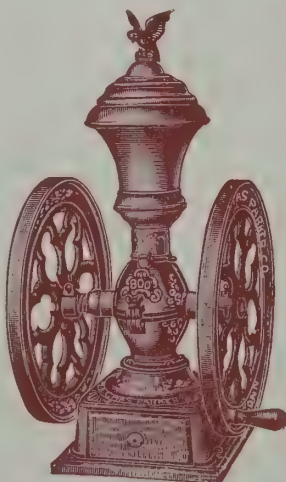
We manufacture a line of

Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

Enquiries concerning our line will have prompt attention. Catalogues on application.

THE
CHAS. PARKER CO.,
MERIDEN, CONN., U. S. A.

NEW YORK SALESROOM: 96 CHAMBERS STREET



DIETZ Nos. 1 and 2 COLD-BLAST LANTERN BLIZZARD.

These Lanterns are the culmination of a vast deal of experiment, and are offered as something *extra good* in the Lantern line. We call them "Cold Blast," for the reason that they are fed exclusively with cold air, that which comes from above, being taken in through openings between the two rings at the top. This system of air-supply greatly stimulates combustion with the resultant extra volume and intense whiteness of its light. They are fitted with an entirely new and most effective device for raising and lowering the globe, which also locks the burner in position. They are, in point of fact, a close following of the well-known Dietz Globe Street Lamp, and, as already stated, will meet the demand of any one seeking an "extra good" Lantern. No. 2 is fitted with 1-inch burner and "Blizzard" globe. No. 1 is fitted with No. 1 burner and "Blizzard" globe.

Price, No. 1, \$13 50 per doz.
No. 2, 16.00 "

We are pleased to send complete catalogues (Spanish and English) and price-list of our complete line of Lamps and Lanterns to those interested.

**R. E. DIETZ
COMPANY,**

NEW YORK, U. S. A.

Established 1840.



ARCADE MANUFACTURING CO.

(INCORPORATED '885)

Manufacturers of

"X-RAY," "ROYAL POUND," "CRYSTAL,"
"IMPERIAL," "TELEPHONE," "JEWEL,"
"NEW HOME" and "FAVORITE"

Coffee Mills.

ALSO

"Champion," "Handy"
and "Phoenix"

CORK PULLERS

AND

"Perfect" Lemon
Squeezers.



"X-Ray" Coffee Mill.

X-Ray, a one-pound Wall Mill of entirely new design. Easily fastened to the wall, requiring but four screws. Will grind fine or coarse as desired. Coffee always in sight.

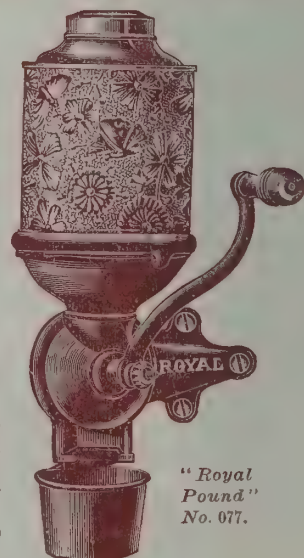
Sample Dozen, boxed ready for steamer f. o. b. cars New York, \$3.50.

Size of box, 14x14x21 in. Weight: gross, 60 lbs.; net, 45 lbs.

Royal Pound No. 077, the latest Wall Mill. Made of cast iron, finished in black enamel. Fancy embossed sheet-metal hopper, holding a pound of coffee airtight. **SELLS AT SIGHT. Sample Dozen**, boxed ready for steamer, f. o. b. cars New York, \$4.00. Size of box, 12x16x20 in. Weight: gross, 56 lbs.; net, 40 lbs.

Orders received through export houses. Please mail duplicate order to us. Our illustrated catalogue mailed postpaid.

ARCADE MANUFACTURING CO., Freeport, Illinois,
U. S. A.
Hardware Specialties Manufacturers.



"Royal Pound"
No. 077.

GRAND RAPIDS DESK COMPANY,

Manufacturers of **HIGH-GRADE DESKS** OFFICE HOME **FOR EXPORT.**

ESTABLISHED 1880.

ESTABLISHED 1880.



Send for **Net Export Prices**, which include boxing and delivery F. O. B. New York.



OUR NEW ROLL-TOP DESK.
No. 516.

PRICE, \$170.00

Our 100-Page Catalogue, illustrating and describing the many styles of **DESKS** made by us, mailed post-paid to all parts of the world.

NEW DESIGNS.

SUPERIOR WORKMANSHIP.

SUPERB APPEARANCE.

Our New Line of Desks, for All Uses, Recently Placed Upon the Market, Embody the Results of Over 23 Years' Practical Experience in Actual Manufacturing.

GRAND RAPIDS DESK CO., MUSKEGON, MICH., U. S. A.

"The Standard"



"The Standard," Style "B," Without Switch.

Our Fans are used in all parts of the world. Our experience with foreign requirements enables us to meet all conditions, especially in respect to special insulation. Other strong points are artistic design, high finish, economy in operation and blade-carrying power.

Recommendations of our customers are our best guarantees.

CEILING, DESK and BRACKET types, for all direct-current circuits.

Write for further particulars, descriptive literature, prices, etc.
Our Standard Motor Book (20 pages), illustrating and describing fully our complete line of Standard D.-C. Motors and Dynamos up to 15 H.-P., cheerfully mailed for the asking.

THE ROBBINS & MYERS CO.,
SPRINGFIELD, OHIO, U. S. A.

"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the



WHITE LILY WASHER.
WASHES LILY WHITE.

White Lily Washer.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is 2½ turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** (\$30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**
Weight, 600 lbs. Measurements: 18x24x24 inches.

WHITE LILY WASHER CO.,
MANUFACTURERS,
DAVENPORT, IOWA, U. S. A.

C. L. HAUTHAWAY & SONS,

346 Congress St., Boston, Mass.,
U. S. A.

Specialties.



Regular
4-oz. Bottle.

Best dressing put up and warranted in all respects.



Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

For polishing patent leather shoes quickly and without injury to the leather.



PHILADELPHIA NOVELTY MFG. CO.

Thirteenth and Noble Streets, Philadelphia, Pa., U. S. A.

NOVELTY INKSTAND No. 3



American Novelties

NOVELTY (SELF-CLOSING)
INKSTAND No. 1 (large),
retail, - **75 Cents**

NOVELTY (SELF-CLOSING)
INKSTAND No. 3 (small),
retail, - **35 Cents**

PATENTED SPECIALTIES FOR EXPORT.

All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of Sydney, Melbourne, Adelaide, Barcelona and Paris, for novelty, workmanship, finish, simplicity, utility and cheapness.

WHOLESALE PRICE LIST.

Novelty Paper Fastener, \$4 doz.; Keystone Paper Fastener, \$6 doz.; Original Paper Fastener, \$12 doz.; Novelty Staples, 15c. per 1,000; Novelty Suspension Rings, 30c. per 1,000; N. Paper Clip, 75c. doz.; P. Paper Clip, 50c. doz.; Novelty Pin Clip, 90c. doz.; The Auto File, \$1.50 doz.; B B C Paper Clip, \$1.50 doz.; Balancing Board Clip, \$2, \$2.25, \$2.50 doz.; Upright Paper Clip, \$1.50 doz.; Accumulator Bill File, \$1.50 doz.; Standard Pen Rack, 1.75 doz.; Spring Folding Pen Rack, \$2 doz.; Combination Paper Weight and Clip, \$4 doz.; Pocketbook Postage Stamp Holder, \$1 doz.; Automatic Fountain Penholder, \$1.50 doz.; Novelty Inkstand No. 1, \$6 doz.; Novelty Inkstand No. 3, \$3 doz.; Novelty Slate Pencil Sharpener, 40c. doz.; Vest Pocket Glass Cutter, 90c. doz.; Novelty Pocket Knife, \$4 doz.; Novelty Hunting Knife, \$8 doz.; Novelty Pocket Screw Driver, \$4 doz.; Artist's Rotary Kit, \$5 doz.; Self-locking Door Indicator, \$2.50 doz.; Madame Louie Hair Crimper, \$2.50 great gross; Novelty Stitched Hair Crimper, \$1.50 great gross; Automatic Fisher, \$1.50 doz.; Automatic Towel Holder, \$1 doz.; Suspension Gas Wrench, 60c. doz.; Novelty Skein Holder, \$4.80 doz.; Keyring Door Securer, \$1.50 doz.; American Mincing Knife, 1, 2 and 3 blades, 75c., \$1.25 and \$1.75 doz.; The Masticator, \$1.75 doz.; Duplex Can Opener, 30c. doz.; Universal Wardrobe Shelf Bracket, \$1.50 doz.; Double Match Box, Bracket, \$2 doz.; Universal Washer Cutter, \$8 doz.; Novelty Pen Puller, 40c. doz.

Discounts 20 per cent. from above list. Send your order through any responsible U. S. export commission house. All such houses in New York handle our goods. Catalogue free. New articles constantly appearing. Goods shipped to all parts of the world.

LOVELL MFG. CO.

Erie, Pa., U. S. A.

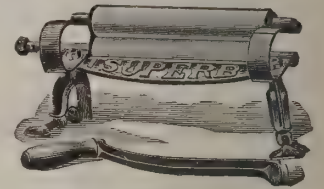
Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS, RAT and MOUSE TRAPS.



Send for
Catalogue
and
Prices.



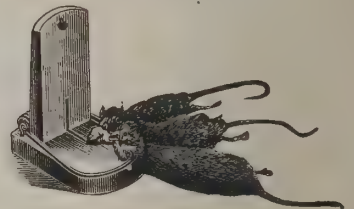
We make a full line of
CLOTHES WRINGERS
for the Export Trade



Delusion
Mouse Trap.



Rex Trap.
Made in two sizes:
large size for rats;
small size for mice.



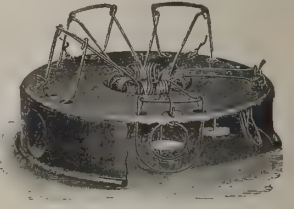
Erie Rat Trap.
Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch,"
MOUSE TRAPS—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker,"
"Easy Setting Wood Choker," "Cyclone," "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of
Wringers
in English only
and of Rat
and Mouse
Traps in both
English and
Spanish.



Lovell's Easy-Setting Metallic Mouse Trap.



CHEAP PRINTING.

Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **\$40.00.**

10x15-inch Press, with 10 styles of type, ink, etc., **\$125**, or with more type, rules, etc., for small periodical, **\$200.**

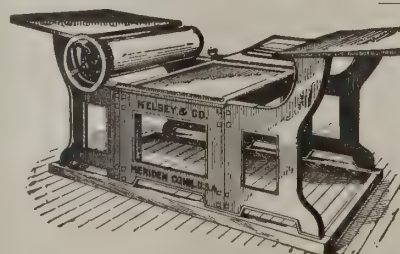


PRESS UNION.

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, **\$200.** Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., **\$400**, outfit included.

CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, **\$12.00.**



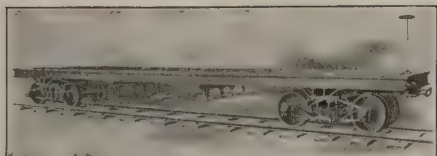
Cylinder Press.

For newspaper and large announcements. Bed, 29x43 inches. Price, **\$500.** Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

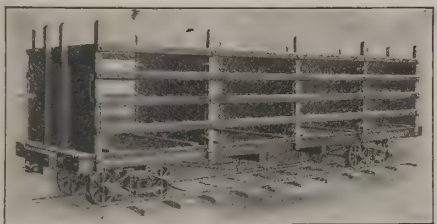
Catalogues, free by mail, of presses, types for all languages, paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.

CONTINENTAL CAR AND EQUIPMENT CO.



ALL-STEEL FLAT CAR.



CUBAN CANE CAR.

FOREIGN DEPARTMENT:
Whitehall Building, Battery Place, New York, U. S. A.
Cable Address: "CONEQUICO," New York.

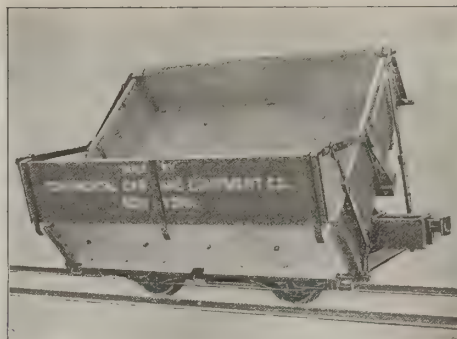
MANUFACTURERS OF

Railway Freight, Plantation, Industrial and Mining Cars.

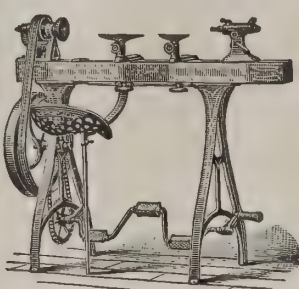
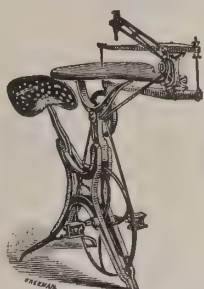
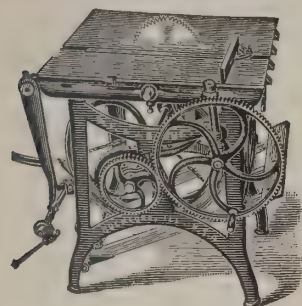
We also make Special Cars for all purposes, from designs furnished, or will furnish our own designs upon request
FOR FOREIGN MARKETS.—Our Cars are taken apart and packed for shipment according to the best known methods.

Our Catalogue (English and Spanish), illustrating and describing the various styles of STANDARD CARS made by us, mailed postpaid.

Please mention THE AMERICAN EXPORTER.



This cut shows our modern Dumping Car. It dumps on both sides of the track and is built strongly for hauling and dumping dirt, rock, sand, clay, ore, etc. Built in all capacities from 1 to 5 cubic metres.



BARNES' PATENT FOOT, HAND AND STEAM

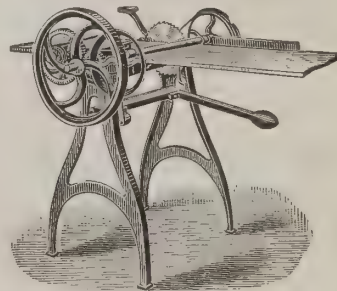
Power Machinery

FOR WOOD AND METAL WORK.

SCROLL SAWS, CIRCULAR SAWS, LATHES, MORTISERS, TENONERS, GRINDING MACHINES, DRILLING MACHINES, ETC.

Particular attention given to the proper execution of orders for export. Illustrated catalogues and price lists in Spanish and English free on application. Orders received through any reliable commission house in the United States. Prices and trade discounts quoted on application.

W. F. & JOHN BARNES CO., Sole Manufacturers,
791 Ruby Street, ROCKFORD, ILLINOIS, U. S. A.



MONROE PORCELAIN REFRIGERATORS.

THE MONROE IS A HIGH-GRADE REFRIGERATOR, BUILT FOR THE HOUSEHOLD.

Each food compartment is moulded in one solid piece of porcelain. The corners are rounded. There are no joints or crevices for the food to decay in.

The porcelain is white, durable, and as easily cleaned as a china dish. The ideal house refrigerator, absolutely sanitary. The prices here quoted for foreign markets only (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

MONROE No. 21, Style D, Solid Porcelain Inside, \$54.00
Oak Exterior,

Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.

MONROE No. 30, Style E, Solid Porcelain Inside, \$69.00
Oak Exterior,

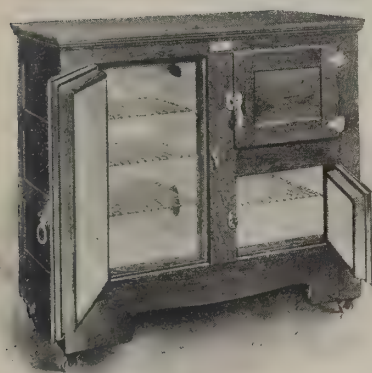
Crated, measures 49 x 27 x 57 inches. Gross weight, 820 lbs.

All sizes carried in stock ready for immediate shipment. Special sizes built to order.

Our latest catalogue, illustrating and describing the various styles of Solid Porcelain Refrigerators made by us, mailed postpaid.

Orders received direct or through export commission houses. When ordering through the latter, to prevent errors, kindly mail us a duplicate of order.

Specify "MONROE."



Monroe Refrigerator No. 21. Style D.



Monroe Refrigerator No. 30. Style E.

MONROE REFRIGERATOR CO., Patentee and Manufacturer, **LOCKLAND, OHIO, U. S. A.**



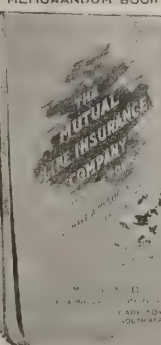
CELLULOID
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MEDALLIONS,
BADGES
AC.

MATCH BOX

TAPE MEASURE



MEMORANDUM BOOK



KEY RING

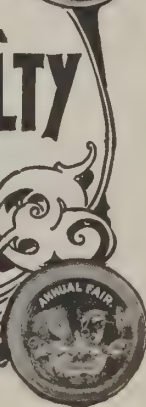


CATALOGUE, ESTIMATES AND SPECIAL DESIGNS ON APPLICATION.

ADDRESS, EXPORT DEPT.

**BALTIMORE
BADGE & NOVELTY
COMPANY.**

BALTIMORE, MD., U.S.A.



KNOCK-DOWN SHOW CASES FOR EXPORT.

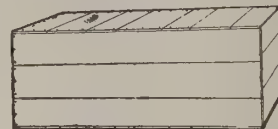
SHOW CASE No. 31 is our leader for foreign markets, and is just the thing for displaying furnishing goods, chemists' sundries, dry goods; in fact, is well adapted for the display of any line of goods.

SHOW CASE No. 31 "set up" (ready for use) is 8 feet long, 42 inches high and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength A sheet glass in fronts, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with 2 wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

Our catalogue, illustrating and describing the various styles and sizes of Knock-Down Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.

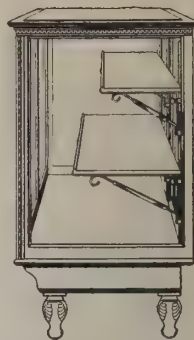
GRAND RAPIDS FIXTURES CO.

GRAND RAPIDS, MICHIGAN, U. S. A.



8-Foot No. 31 Show Case.

Showing end view of an 8-ft. No. 31 Show Case set up for use, and an end view of the same case, knocked down and boxed for shipment. Weight, 334 lbs., gross; 248 lbs., net; cubic measurement, 28 cubic feet. Securing lowest possible freight rates.

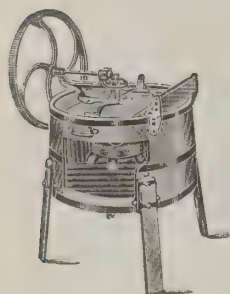


"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."

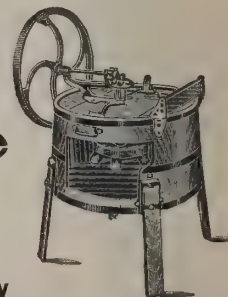
THE Guarantee FOUR-STROKE ROTARY Washing Machine

Just placed upon the foreign and home markets, combines the Latest Improvements in High-Speed, Ball-Bearing Washing Machines and will accomplish all that is claimed for or required of any washing machine, and more.

NOT A SPECULATION, BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.



GUARANTEE WASHER.

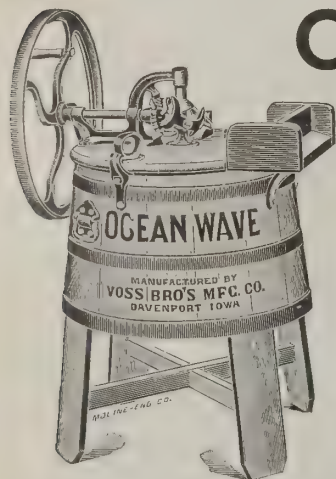


GUARANTEE WASHER.

FOR TWENTY DOLLARS in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines.** (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds. Order **FOUR NOW.** Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States. NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.



ONCE SOLD, THEY NEVER COME BACK.

OCEAN WAVE WASHERS

Wash the clothes as easily and cleanly as sea waves wash the beach.

OVER 100,000 NOW IN USE.

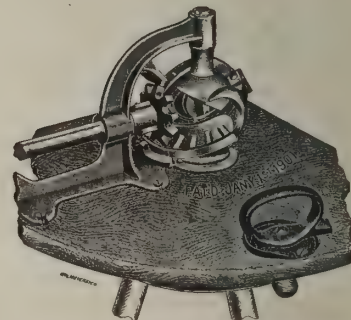
Shipping weight, 85 lbs.

Size, 2 x 2 x 3—12 cubic feet.

SPECIAL FEATURES.

Our Gearing: Simple in construction; impossible to throw out of gear; the longer it is used the easier it will run. Our Fly Wheel has no threads to strip; no nuts to lose, being attached or detached in a moment's time. Our Improved Dasher is hand-turned; clothes do not cling to it and tear. We assure free action of dasher by using heavy galvanized flanged ring in dasher block, thereby relieving all friction. In general construction of tub and finish, only best materials are used. We ship through any responsible New York exporter. All orders must be sent to us direct.

VOSS BROS. MFG. CO.,
DAVENPORT, IOWA, U. S. A.



THERE IS NO FRICTION.
NO LOST MOTION.

THE GENUINE

"O-K" WASHER.

KNOWN AND IN USE THROUGHOUT THE CIVILIZED WORLD.

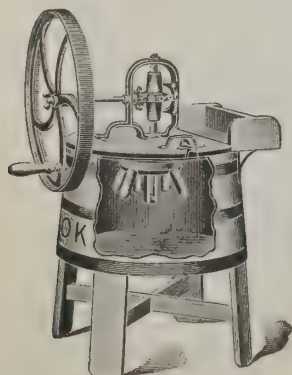
The O. K. is the KING of ROTARY WASHING MACHINES! Because:

1. The O. K. is the only Rotary Washer that has **Revolving Steel Ball Gearing**, reducing the friction and thus making the machine so **light running and almost noiseless.**
2. The tub is made of **Louisiana Red Cypress** lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside of the tub, as are all of the castings.
3. **The wheel turns right or left, pin-wheel or dasher reverses automatically, turning the clothes back and forth through the hot soap-suds, and cleaning them without rubbing them to pieces.**
4. **The O. K. Washer is made by experienced mechanics, and will outlast any other washer on the market.**
5. The tub has a wringer box, fastened with steel brackets.
6. The lid on tub closes tight, no escape of steam.
7. Has gilded hoops, castings and name.

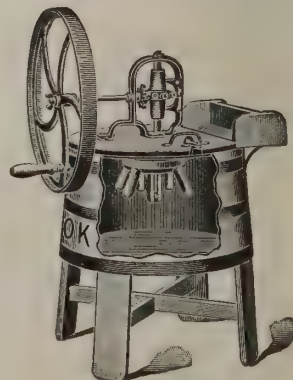
Prices quoted F. O. B. New York. Each **O. K. Washing Machine**, crated, ready for transportation abroad, weighs about ninety (90) pounds, and occupies nine (9) cubic feet

Manufactured Exclusively by

H. F. BRAMMER MFG. CO.,
DAVENPORT, IOWA, U. S. A.



O. K. WASHER.



O. K. WASHER.

THOMAS K. OBER & CO. (INC.)

832 DREXEL
BUILDING,

Sole Export Agents of the Kitson Hydro-Carbon Heating and Incandescent Lighting Co.

PHILADELPHIA,
PA., U.S.A.

What helps to sell goods?
What advertises your place of business?
WHAT BRINGS TRADE?
What makes the home more inviting?

LIGHT.

Use Keros Incandescent Oil Lamps

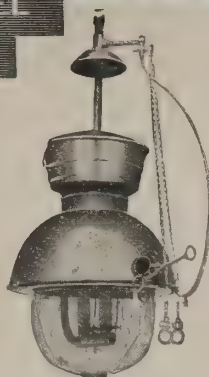
in your shop and they will pay for themselves in a month in increased trade. Most economical light in the world. Burns 90 per cent. of air to 10 per cent. of vaporized oil.

One Gallon of Kerosene Oil Gives a 1,000-Candle-Power Light for Twenty-five Hours. Perfectly Safe. Does Not Increase the Insurance.

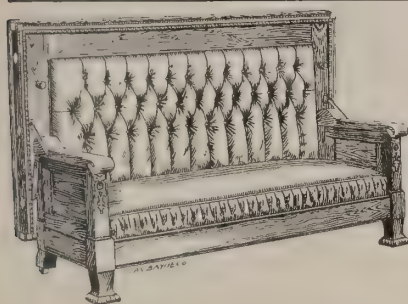
Send for Illustrated Catalogue and Price-List, giving full information.

See June number of this Journal for illustrations of various styles.

No. 190x.
Outside Lamp;
outfit with
tank;
2,000 candle-
power;
30 inches.



No. 501.
Bracket Lamp; outfit with
tank; 1,000 candle-power;
15 inches.



Style "C," as a Davenport.

BALKE MANUFACTURING CO.,

Patentees and Manufacturers of

Balke Combination Davenport, Billiard and Pool Tables,
and Standard Tables.

INCORPORATED \$100,000.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note—The prices here quoted, U. S. Gold or its equivalent, are for **Foreign Markets Only**, and include boxing ready for steamer, delivered f. o. b. cars at New York City.

Style "C," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

Style "C," converted into a Billiard or Pool Table, has a playing surface of 3½x7 feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, \$95.00. Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: 4'x8'x6'; 32"x36"x6'.

Standard Billiard Tables.

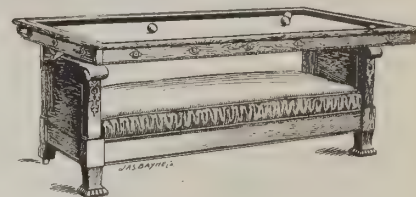
"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate; imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4x8 feet. Price complete, \$125.00. Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: 4'2"x8'2"x8'; 4'x8'2"x2'.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, 3½x7 feet. Price complete, \$90.00. Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: 4'x8'x8'; 3'6"x6'x2'.

Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order.



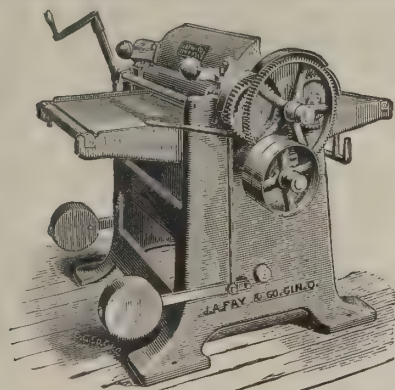
"Benedict" Special Billiard Table.



Style "C," converted into a Billiard Table.



"Den" Special Billiard Table.



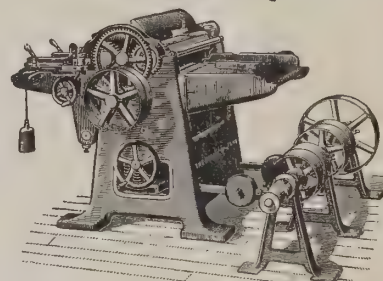
No. 2 SURFACE PLANING MACHINE. Requires very little power, and is designed for general work. Works all kinds of wood with facility. Write for cuts fully showing its advantages.

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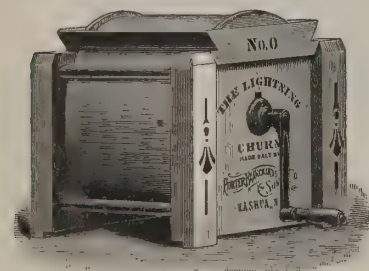


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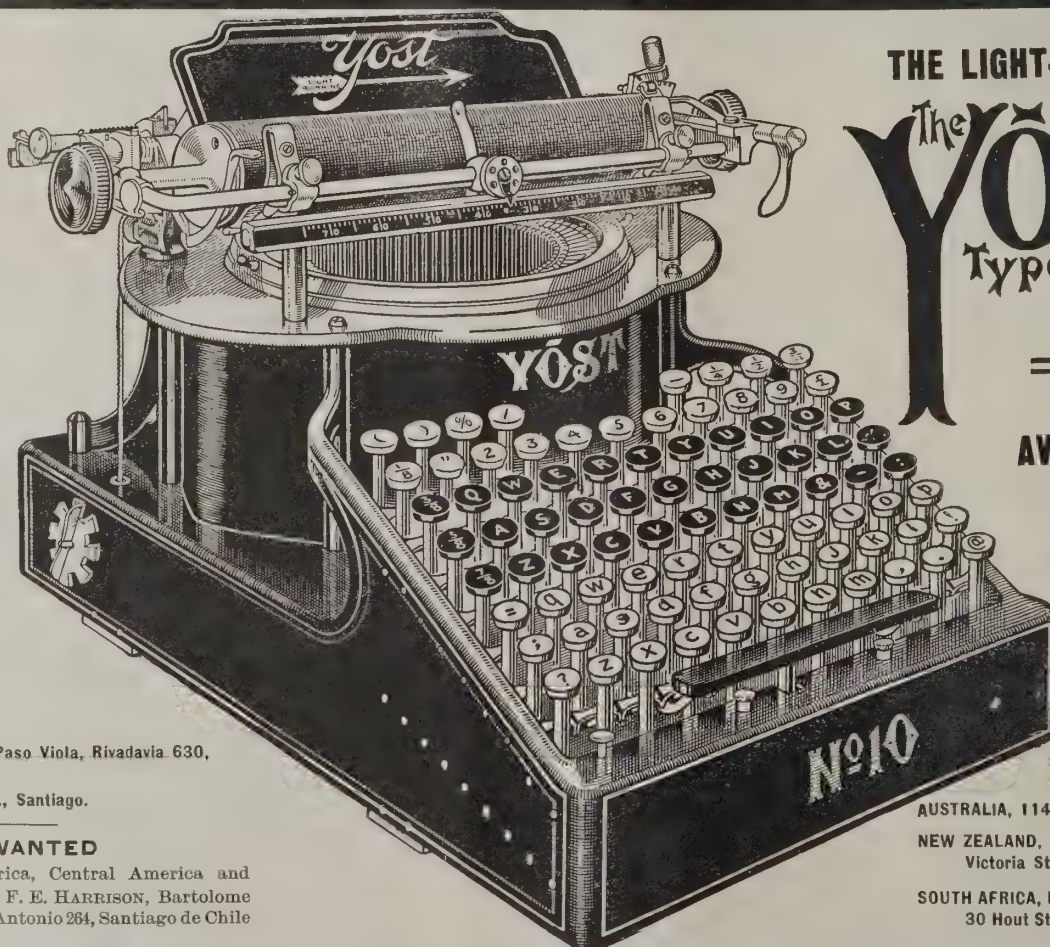
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NOTHING IS "JUST AS GOOD."

WE have received a letter from a correspondent abroad in which he complains that some American goods are imitated by our foreign competitors. He says:

"The imitations in appearance are not so crude as you would imagine. They would perhaps fail to deceive a person thoroughly familiar with the genuine article, but in style and workmanship they come sufficiently close to deceive people who have heard of the superior products of American manufacturers and are not disposed to take anything else. These articles, when put to the test, are inferior to American products and give dissatisfaction. In cases where the buyer detects the imitation he is told that the article is 'just as good' as the American and perhaps the price is made lower as an additional inducement to effect a sale. Cannot THE AMERICAN EXPORTER do something to correct this condition?"

Cases of the kind referred to by our correspondent are by no means isolated. About all that can be done, however, is to warn our readers that an imitation is never equivalent to the genuine article, that a lower price for something "just as good" is a danger sign which indicates poorer workmanship or some other defect in the contrivance, implement or machine—be it what it may. Do not take anything "just as good" at any time, no matter what the salesman may say. Buy what *you* want, not what *he* seeks to sell to you. Study the matter carefully as to what you want before you undertake to make a purchase and then insist on having the real article—whether it be of foreign or American make. Of course, it is to be hoped that you will want American articles—but as to the latter you will never be informed by an intelligent salesman that they are "just as good." That would not be true, for there are no better manufactured articles put forth for the lowest consistent price anywhere in the world than are furnished by American manufacturers to their customers in foreign lands. If you are already a user of American goods nothing more need be said, for you will never change. If you have not given them the test of use, it is time for you to learn by experience that you have been missing something. In any event you can rely upon the guarantees of the advertisers in THE AMERICAN EXPORTER. Our trade directory is an index to the more important and thoroughly reliable concerns engaged in the foreign trade and none others are permitted to use our columns under any terms or at any price.

POSTAL receipts are a valuable thermometer of a country's business progress. In the fifty largest post-offices in the United States for the last year New York City headed the procession with a gain of nearly 6 per cent., while the general average was slightly below that figure. The increase shows that the business of the country is moving along with a conservative and substantial growth.

MAKING WORLD'S HISTORY.

AUGUST was full of news from the Far East regarding encounters on land and sea between the rival forces of Japan and Russia. As this issue of THE AMERICAN EXPORTER goes to press it seems only a question of a few days when Port Arthur must fall into the hands of the Mikado's men. It is possible that the expected may not happen, but it is extremely improbable. The fall of Port Arthur, if it occurs, ought to bring about a cessation of hostilities and cause the belligerents to consider the question of agreeing upon terms of peace. Further prolongation of the war would not be advantageous to either side. The Japanese would be in a position to exercise a further triumphant control of the Pacific border, but their armies could only attempt to carry their campaign further toward St. Petersburg at an expense of money and loss of life that would be greater than any of the casualties which have so far happened, while the result would inevitably be the same, for we do not believe that either nation could eventually entirely subdue the other, no matter how long the warfare might be prolonged. It is to be hoped that the contending countries will try to make peace as soon as the Port Arthur incident is decided.

Russia internally, as well as in the country's foreign relations, has been the subject of worldwide interest. The birth of a son and heir to the Czar was a notable event of the month. The frequent appearance of daughters at the wrong time has been a cause of sorrow and dismay to the royal family, to say nothing of the effect upon the subjects of the Emperor. The assassination of Von Plehve, the Minister of the Interior, was another notable event in the history of Russia. Whether he was to blame or not, it is charged up to him that he was responsible for the lines of policy which resulted in the Kishineff massacres and which interfered with the expansion of Russia's trade relations with the United States and other countries.

There can be no doubt of the fact that Von Plehve had great influence not only in formulating the domestic policies of his country, but in suggesting the policies that have been pursued in dealing with Japan and other countries, either diplomatically or commercially. While the United States has nothing that it cares to complain of at this time, there have certainly been some rather annoying trade incidents, as to which comfort may be extracted from the knowledge that other countries have suffered more than ours. If Von Plehve's assassination removes an obstacle from an early adjustment of the Japanese trouble and eventuates in the establishment of better trade relations between Russia and other countries there will be people found who will say again that "good may come out of evil."

COAL and cotton are not *per se* contraband of war in the opinion of the American Government. Secretary Hay has issued a circular letter to our representatives abroad for their information, which seems to conflict with the Russian declaration that those articles are contraband of war. The Russian rules would, if literally interpreted, stop all commerce with the range of its war vessels. That is something that America can not and will not tolerate. Under some conditions coal and cotton—and numerous other articles—would unquestionably be open to seizure as contraband of war, but no inflexible rule can be put into force in that regard. The subject is full of technicalities and it is not our purpose to go into it beyond giving the assurance that the United States is determined that the Far East war shall not interfere with peaceful international commerce.

GUNS of 13-inch caliber are certainly national luxuries. It costs \$500 every time such a piece of war machinery is fired, but preparedness in the matter of great gun accuracy of fire is something of importance to the American Navy, which will use up more than a million dollars this season in ammunition for practice purposes.

WHY would it not have been a good idea to refer the question of contraband and the disposal of the prize ships, captured in the Red Sea, to The Hague Peace Tribunal? The question is one that ought to be settled by international edict and not by the arbitrary action of any one nation.

DESKS AND OTHER FURNITURE.

WITHOUT going into details, it may be confessed that the export trade in American furniture is not anywhere near as large as it ought to be. In this branch of industry our inventors and skilled artisans have produced wonderful examples of utility and artistic effect. In the matter of desks and office equipment of various kinds even more remarkable progress has been made than in the making of household furniture. In both lines our mechanics have earned laurels from those in America who are using the products of their genius.

The export furniture trade has not, perhaps, been prosecuted as effectively and as industriously as might have been the case if climates and other natural conditions were the same all over the globe. Years ago attempts were made to send temperate zone furniture into torrid zone countries, with quite unsatisfactory results. In this respect, we understand, exporters of ordinary furniture who are attempting to do business have long since used screws instead of glue for countries where the torrid heat might melt the latter. Desks are more expensive than ordinary furniture, perhaps, for purchasers are more critical and the usefulness of the article is in more constant, urgent demand. The development of the roll-top desk began more than twenty years ago, and it has proceeded to a point where we do not think American goods in that line can be excelled either for usefulness or artistic effect.

This editorial is written on a walnut roll-top desk purchased nearly twenty years ago. The desk has since been through climatic changes that would destroy the usefulness of any but a well-built piece of furniture. For one long summer it was left practically unprotected in a section of the country where the heat and dampness were as trying to either human endurance or anything else as can be found anywhere in the United States. The desk came out of that and other sieges of the same sort in a manner that reflects credit upon the artisans who constructed it. If this identical desk were to be offered for sale it would need a little polishing, only a little, for editors are proverbially careless about the tidiness of their desks, but otherwise it is one of the strongest testimonials that anybody would want of the worth and durability of an article of this kind of American manufacture.

It will be observed by our readers that we write with some interest upon this subject. It is only the interest that comes from personal appreciation of an important industry, from an experience in the use of a desk that has been pulled apart and erected close to ocean breezes and dampness, that has again been torn apart and transported to a miasmatic, swampy region with a temperature close to 100 and a humidity that caused the desk to be left to its own fate for months. The vicissitudes of this particular roll-top desk would make a longer and more interesting story than we have the space to tell, but the moral of it all gives proof of the excellence of the work of the men who built it. Since this desk was made many improvements in construction and ornamentation have followed, but its serviceability, durability and satisfactory appearance are a tribute to the men engaged in this industry. A desk, more than anything else, one wishes to buy for a lifetime. It is not a piece of furniture that can be changed in an office or a home, as are the fashions in attire, so that every one must necessarily want to have the best—a best that will stand the test of years. In this direction there can be no doubt about the economical availability of American desks. If one of twenty years' age and much knocking around is now worth its place as the chief piece of furniture in an up-to-date office with electric lights, telephones and all the modern accessories of business convenience, it seems to show that Americans *know* how to manufacture office furniture.

OUR export trade for the last month exhibited gratifying increases in agricultural implements, wire, wire nails and pipe. Without going into details, it may be said that the increase represented thousands of tons. As to these necessities, people in other countries are coming more than ever before to recognize that our manufacturers furnish the very best goods that can be obtained for the money.

THE COTTON CRISIS.

PROBABLY the most important matter of international industrial concern at present is what is commonly called "the cotton crisis." It is agitating almost every country in the world, but Great Britain and the United States are more affected than any other countries. The chief trouble is with the speculators in commodities. In America these speculators in recent years have lost all they made, and more than that, in attempting to corner cotton, but that has not prevented others from suffering through the effects of their operations. A cable report of the meeting of the British Association at Cambridge last month, in which Premier Balfour participated, records the fear of Mr. Balfour that "gambling in futures cannot be stopped." That, of course, is the bane of the cotton industry.

The cotton crisis in America has come down to almost normal conditions. The chief figure in it has been forced into bankruptcy. That has not lessened the evil effects abroad, if we are to judge by what Mr. J. A. Hutton, one of the chief speakers at the meeting, is reported to have said. Mr. Hutton estimated that no less than 10,000,000 people in Great Britain were more or less dependent on the cotton trade. The employers alone, he said, were losing \$200,000 a week through short time, and the total loss to capital and labor in the cotton and other allied trades throughout the country was not less than \$1,500,000 per week, or \$75,000,000 per annum.

The American mills have not suffered to the same extent, through prudent management and a closer survey of conditions. Americans generally deprecate attempts on the part of anybody to force abnormal prices or create unnatural conditions.

OUR FARM IMPLEMENTS.

ON another page of this number will be found an article describing the exhibition of agricultural implements at the American Exposition at St. Louis. That the exhibition is a credit to our implement makers and a monument to American ingenuity and American industry we think all who have seen it will agree. While not so large as the manufacturers would have had it, if the space allotted to them had been adequate, the exhibition is a truly representative one, and if it can be said to be wanting in size that defect is fully counterbalanced by the excellent quality and widespread variety of the machinery and implements shown.

To foreign visitors interested in the cultivation of the soil a day spent in this section of the great fair cannot fail to be an object lesson regarding improved agricultural aids and appliances, the benefits of which will crop out when they return to their individual fields of labor in increased orders for American appliances and more profitable tilling of the soil which they may have under cultivation.

ACCORDING to the census of 1900 the wealth of the entire United States is estimated at ninety-four and a quarter billions of dollars. Of this amount, New York claims more than thirteen billions—an astonishing total and one before which the dominance of the metropolis as the chief center of the country's wealth must be conceded to be indisputable. More surprising than the amount itself, perhaps, is the rapidity with which this great wealth has been accumulated. Twenty years ago, the actual valuation of real estate in what is now the Borough of Manhattan was only \$1,376,000,000, as against \$3,676,000,000 for the present year. The amount of personal property actually taxed has increased proportionately. The amount of real property recently returned for taxation is more than \$5,000,000,000. Taxes are paid on nine hundred and twenty-eight millions of personal property.

WIRELESS telegraph stations will not be controlled by the Government in America in times of peace, but the joint Navy and Army Board will be kept informed regarding the stations erected and their foreign connections, so that in time of war the board, representing the Government, can take full and intelligent control of the stations. A proposition was made that the Government take entire control at all times of the wireless systems operating on the American coasts, but the idea has met with disapproval.

AUTOMOBILE FIRE ENGINES.

AUTOMOBILES are holding the center of the stage in America at present. There were successful endurance tests last month, half-way across the North American continent, which gave new evidence of the progress that is being made by our manufacturers. As previously noted in these columns, this industry has been progressing rapidly within the last year or two and our inventors are branching out in every direction. One of the latest forms of practical use of the automobile is the equipping of fire apparatus. Autos are now being used by the firemen in several cities and even the big engines and trucks, which now require three horses to drag them, will soon be run to fires by their own power more speedily and with more economy of motive power than can be had under the old system.

Experiments in automobile fire engines have been made from time to time during several years, but until recently the inventors have not been able to approach the perfection of operation that is essential in large cities with crowded streets. Despite the difficulties which have been met, it is certain that some of the new machines will be found to have solved, within a year, the problem of the automobile fire engine. Persons who have no actual, practical knowledge of the use of fire apparatus in large cities cannot fully realize the extraordinary demands that must be met in producing an automobile fire engine that is as efficient and reliable in speeding to fires as is the horse-drawn machine.

In the New York City Fire Department numberless automobile engines have been tested during the last few years and more than a score of years ago a steam-propelled fire engine, based on the traction engine principle, was put in service. It was so slow and it frightened so many horses that it was quickly retired from active use. The chief trouble with models of auto fire-engines so far officially tested has been the tendency of the vehicles to slide or "skid," as the firemen call it. This difficulty will soon be overcome and it is a safe prediction to make that within five years horses will no longer be used in the fire department of any American city.

It must not be thought that American genius in this field is confining its efforts to producing fire-engines alone, for that is not the truth. We have pointed out from time to time in the last year the progress that is being made in manufacturing both pleasure and commercial automobiles and some marvelously fine specimens are in general use in this country. Up to within two years the foreign manufacturers were ahead of our makers, but the tide began to turn about that time and the great bulk of the enormous demand for automobiles in America is now supplied by our home producers. So great, however, is the increasing call for self-power vehicles, that our cousins abroad still supply us with their vehicles; but considering the total volume of trade in the industry, the percentage of imports now amounts to about 5 per cent. of the whole, whereas two years ago foreigners supplied us with 90 per cent. Americans are shrewd enough to buy the best that they can obtain for the money—just as they expect others to do—so that this exhibit of the worth of our automobiles is a guarantee that they are all right. Opportunities will soon come to our friends abroad to purchase as good American automobiles, for private or business uses, as may be obtained anywhere in the world.

PERSEVERANCE is a virtue that in a good cause always merits success. Sir Thomas Lipton, we learn, intends to make another effort to capture the America's Cup, trying a new and fourth Shamrock for the purpose. Sir Thomas's loyalty to the shamrock has never been questioned, but some of his American friends, who would like to see such a plucky sportsman win once, at least, out of half-a-dozen times, have suggested that he quit the Shamrock for a name and call the new yacht Young Hyson, or some other name in keeping with the other half—the commercial part—of the challenger's life. But whatever he may call his boat, he will be assured of the royal welcome due to a knight of his sportsmanlike valor.

WHILE other nations in the Orient are engaged in making war China is increasing her patronage of American goods. The volume of business reported last month in cotton goods was greater than has occurred for more than two years.

AUSTRIA INVADES AMERICA.

AS we close the compilation of the current issue of THE AMERICAN EXPORTER, the New York Board of Trade and Transportation is in momentary expectation of the arrival in this country of a delegation of Austrian bankers, manufacturers and merchants, including wholesalers, importers and exporters. The delegation represents the "Austrian Trades' Association," which, we are informed, is the largest and most influential commercial and industrial organization in the Austrian monarchy. The avowed object of the invasion is to make a close study of American business methods and conditions with the purpose of establishing stronger commercial relations between Austria and the United States.

The delegation will receive a hearty welcome, and every effort will be made by Americans to extend all possible courtesy and information to the Austrians. In recent years we have been favored with similar visits by large or small delegations from almost every country on the face of the globe, excepting Austria, Turkey and some very much smaller countries. Austria's geographical location, with reference to transportation facilities, has perhaps been an obstacle in the way of greater trade communion between the two countries. However that may be, such obstacles are gradually disappearing and new methods and ways of communication are coming into vogue in various parts of the world wherever and whenever the necessity for a change is made manifest. We have no doubt of the fact that the visit of the delegation from Austria will be of great benefit to both the monarchy and the republic. The visitors, in any event, are cordially welcome.

TEMPERANCE and economy are given as the reasons why the United States has won first place from Germany in the production of beer. The product of the German brewers was more than 132,000,000 gallons less than the output of the American brewers. According to the American Consul-General at Berlin the "falling off is accounted for variously—cold, wet weather; spread of temperance principles; practice of economy by the middle classes, and the abolition in many shops of the 'beer pause' and the substitution of tea and coffee as beverages." America is not desirous of acquiring the fame of leading the world in the production of beer or any similar beverage, but our brewers have acquired such skill that their beverages are in increasing demand in other countries. If it were not for that demand there would be no reason for the greater output. Our mechanics do not enjoy or tolerate the "beer pause," nor have they done so for many years. The American workingman, as a type, is abstemious and he is growing more temperate as weeks, and months and years pass backward into Time's archives. Beer used in moderation, like other articles of the same nature, is beneficial to some men, although injurious to others. It is an article of trade and commerce and the fact that our brewers are able to produce such an excellent article redounds to their credit, while it does not reflect upon the American workingman in any way.

BARON SPECK VON STERNBURG, the German Ambassador at Washington, has taken position in the front rank of the foreign diplomats accredited to America, and his activity is of value to both countries. Despite his many duties, he has accepted the presidency of the National Advisory Board of the American Institute of Germanics, of the Northwestern University, U. S. A. The institute was founded to cultivate in the universities and in the country at large a deeper and wider interest in the result of German civilization, language, literature, history, archaeology, art and music, and also to draw closer the bonds uniting Germany and the United States. Baron von Sternburg is amply equipped to push forward the work which he will have to supervise.

OUR British and Australian readers will be interested in the story which we publish on another page, from Ottawa, Dominion of Canada, regarding the desire of that dependency of the Crown for an independent consular service. The idea is one that cannot be discussed in a short editorial paragraph, for if carried into effect it would have far-reaching results upon the political and commercial interests of the world.

USE OF AIRSHIPS IN WAR.

WHILE the spectacle of two nations engaged in sanguinary contest and sacrificing thousands of lives does not lend very strong confirmation to the truth of the adage that the best method of securing peace is to be prepared for war, recent military developments point to the possibility that the present struggle, with its enormous loss of life, entailed by the destructive engines of modern warfare, may prove in the end to be a stepping stone to the universal peace which the greatest minds in every known nation hope to see attained.

It would indeed seem that the war between Japan and Russia were to take us a long way on the road to realizing that the only absolute preventive of war would be that its consequences were so terrible that no nation would dare to enter into hostilities with another.

Frank B. Stockton, in his brilliant novel, "The Great War Syndicate," vividly presented such a war to our eyes. He depicted an entire island disappearing by the use of a terrible explosive dropped from an airship, followed by a warning to the belligerent nation from the manager of the "War Trust" that its continent was next marked for destruction. Peace terms were at once arranged.

Other imaginative writers have followed in Stockton's vein and the world could afford to smile at such pictures as the product of the authors' florid fancy so long as such airships and such explosives were existent only in the brain of the sensational writer of fiction. Yet, even before Stockton's story appeared, science had taken long strides in the direction he indicated.

Only five years ago—and since then science has not stood still—the world was presented with the sober declaration, drawn up by a deliberative peace commission, representing all the great powers and signed by the heads of all the great nations, to the effect that the launching of projectiles and explosives from balloons and other new methods of a similar nature were prohibited in the warfare of civilized nations until a date which has just been passed.

In the meantime the same civilized nations have been busily engaged in working out plans for all kinds of flying machines and aerial devices to be employed in peace and war. Some day somebody is going to invent an airship that will really fly and will answer to its helm as readily as a ship in the ocean. Perhaps it has been done already. But if a practical airship has been invented, or shall be invented, war in the future may be made so terrifying, so astoundingly destructive, that the speculation of the fabulists may become a verity.

The proscription adopted at The Hague conference alluded to expired on July 29th last, and by its expiration a new and awful mode of destruction of life and property is made permissible by the international code. The effects of such a warfare—if science has advanced far enough to admit of them—are startling. By the projection of high explosives from a dirigible balloon or airship entire armies might be annihilated at one blow; whole squadrons of battle-ships instantaneously wiped out of existence.

If we learn with horror of the havoc wrought by the present methods of modern warfare pursued in the Russo-Japanese struggle, what would our feelings be upon receiving the news that a fleet of aerial warships, hovering over Port Arthur, had blotted that stronghold off the face of the earth. And spectacular as the idea may appear to our minds it is not beyond the bounds of possibility.

WE have frequently mentioned the postal receipts of the American post-offices as being a barometer of our prosperity. The last statement, for a full year, shows that the average gain has been 6 per cent. in the fifty largest post-offices in the country. Considering the fact that in Presidential election years in the United States there is invariably a dulness in trade, the showing confirms our predictions of a steady, healthful growth of business.

SOUTH AFRICA last month took some large consignments of American agricultural machinery. The people in that region seem to be prospering more than ever since the Boer war ended, and there is apparently no diminution in the demand for American machinery in that part of the globe.

EVOLUTION OF WORLD'S TRADE.

IN the development of modern civilization it will be found that, after all, the world is a great piece of material machinery. Every country will be found necessary to the perfection of the complete machine. All will be cogs in the apparatus that closer international commercial relations will erect. A writer in *Gunton's Magazine* furnishes the following text upon which thousands of words could be written regarding the future of the world from various points of view:

"The marvelous progress of Germany during the last quarter century rests mainly upon the development which has made her a leading factor in the struggle for the markets of the world. During this brief period full many a German town has been transformed from a hamlet of a mere handful of people to a thriving center of industry. The productive power of the empire has more than doubled. During this period also her artisans have been fed from the granaries of the United States. It is no reflection upon the German people to say that this supply of cheap food has been and still is a factor of paramount importance in her industrial development. German soil, which is not especially fertile, is unable to furnish food for the rapidly increasing population of Germany. When two decades ago Bismarck advocated a high tariff upon foodstuffs, Germany's home supply of food was more nearly equal to the demand than it is today or will be to-morrow. The fact is that the expansion of German industries has been accompanied by a growth in her population that has outrun the increase in the productive power of her soil."

We do not propose to enter into such a discussion of the subject as seems entirely warranted. We want our readers to do some thinking for themselves, and will only say at this time that the agriculturists, the merchants and the manufacturers of the United States are prepared to do all they can to aid in the development of the photograph of perfect civilized effort and industry which is bound to be ripe for taking before many more years have elapsed. Our granaries may feed Germany and aid her skilled mechanics, but our own splendidly serviceable agricultural machinery will thereby be in greater demand at home, where it is appreciated as much as it is on the myriads of farms elsewhere in the world, where anything but an American mower or reaper, or other article in this line, would now hardly receive polite consideration. There is room enough in the world for everybody. Americans engaged in the export trade do not decry the goods of their competitors. They look upon competition as being the life of trade and the incentive for increased effort towards furnishing the best machinery and other goods that can possibly be produced for the values placed upon the products—which are always based upon a moderate living profit. Our manufacturers do not sell "below cost," but they *do* sell so slightly above it that purchasers in the export trade, as well as at home, always get the full worth of their money.

CUBA has been prospering greatly since she became a Republic. A contract has recently been awarded to an American firm for an extensive electric railway system in the southern portion of the island, and similar orders for American machinery are coming in with a regularity which bespeaks much for the future of our little sister. Cuba seems to have taken on the progressive spirit that is becoming such a feature and such a factor in the social and commercial life of the North American Continent.

READERS of THE AMERICAN EXPORTER will greatly facilitate the answering of inquiries if they will mention the issue in which articles appeared, and, if possible, the page of that issue. All inquiries received from subscribers to the paper are attended to with reasonable promptness, but delays are inevitable unless the request for information gives the data mentioned.

ICE-MAKING machinery, which has well-nigh reached perfection in America, is in greater demand abroad than it ever was before. Some recent exportations have been unusually large.

BELLIGERENTS BUY FROM U. S.

Millions of Dollars' Worth of Goods on the Seas Liable to Seizure as Contraband

AMERICA'S trade with Russia and Japan has increased 100 per cent. in the last year, and its further growth is limited only by the ability of the buyers to pay and the belligerents to enforce the rather uncertain provisions of international law in regard to contraband goods. At the present writing American merchants have upon the high seas, consigned to Japan, goods to the value of \$7,000,000 which in part or wholly are liable to seizure as contraband of war. Consigned to Russia, merchants of the United States have at sea goods of like nature and of about half the value of those en route to Japan.

Both these powers are good customers, but so far only Russia has taken decisive steps to prevent the movement of this class of goods. It is known, however, that Japan is not resting quietly, but that in this country, as probably elsewhere, she is informing herself of every purchase made by Russia and that the whole matter of contraband trade soon may become the subject of international inquiry.

To meet this condition the United States Government has informed itself precisely as to the volume, direction and details of this trade. It is not understood that any measures are to be taken at this time either to prevent it or to support it, but that the knowledge is to be used as emergencies may arise.

Although it is supposed that a considerable business is done in munitions of war, the experience of the trade has been so ample that the lesson of secrecy has been well learned. Notwithstanding it is known that the armies of several nations have been equipped with American arms, the export records of this country do not show that any arms ever left our ports.

For example, several years ago, a certain company furnished 275,000 breech-loading rifles to Egypt. General C. P. Stone, chief of staff of the Egyptian army, it has been alleged, made the purchase. The arms are said to have been shipped as machinery to be used in moving the obelisk which stands in Central Park, and were so billed and delivered. There was no particular reason at that time for such secrecy, for no war was being fought or impending, but the circumstance illustrates the secretive character of the trade.

The Russian Government has been informed, it is said, that one hundred packages of sewing machines shipped by the steamship *Empress of India* from Vancouver on July 25th are in fact rifles from an American arms factory. A shipment of this size, however, is regarded only as a sample lot; but it has taken a tortuous and what would appear to be an expensive route, being delivered at half a dozen different cities in the interior of the United States and taking a zig-zag course, half across the continent, by rail, canal, river and lake route before reaching Vancouver the port of actual debarkation from the United States. The consignment was reshipped and rebilled at each of these places of call and on arriving at Vancouver it was not only rebilled, but the packages were remarked before it was put on board ship for its actual destination.

It is therefore next to impossible to obtain accurate information as to the movement in actual munitions of war, such as ordnance, powder and explosives generally, especially such shipments as are intended for Japan. Because geographical and other conditions prevent Japan from exercising supervision over ships bound to Russia, the trade with that country is less circumspect and is moving with customary openness, except, of course, that regarding actual munitions of war.

Among the items appearing on invoices are silk and catgut ligatures, sulphate of quinine, proprietary medicines, surgical instruments, antiseptic bandages and sponges, camphor—which, by the way, is the basis of smokeless powder—and a certain form of chloride, of which there is one shipment of 1,000 gallons worth \$1 per ounce.

That in three months there have been shipped to the East as an entirely new commerce four and one-half million dollars' worth of medical supplies shows how the current of trade is setting. As an illustration the shipment of surgical instruments is suggestive. The firms engaged in this work have consigned in round figures about one hundred thousand dollars' worth of goods to the East. All are paid for, so that the interest of the sellers is to the future of the trade rather than the shipments themselves, many of which are still afloat.

American Machinery in Japan.

A CORRESPONDENT of *Modern Machinery* sends an interesting letter to that journal about the introduction of American machinery into Japan. He says: "The problem of introducing new machinery into the mills and the shops of Japan is not longer the puzzle of old. The ancient superstitions have given way to the newer ideas, and wherever your correspondent visited he found many examples of modern machinery in service, and the outbreak of the war did not appear to materially alter conditions. The machine shops have been among the first to admit new types of drilling, planing and general up-to-date machinery, there being some very modern tools in use in some of the machine and metal-working shops of Nagasaki and kindred places. The mode of introducing the machines and tools of recent design has been somewhat singular, owing to the prejudices which prevailed. Then, again, other nations tried to get their machines and tools in ahead of the American designs, with the result that competition has been sharp all along the line."

"With the advent of modern machinery in the shops of Japan, the old styles of crude hand tools have rapidly passed away. The remote towns of the hills in which there are shops are about the only places where the ancient handworking mills and the crude bellows of the apprentice can be seen. One may find effective blowers and steam devices in running order in any of the shops. For a long while screws were manufactured exclusively by hand systems, and in parts of the empire the hand-made screw, with its blunt point, still exists, but I saw some of the most modern screw-making contrivances in successful working order in the early part of this year."

"The war was well in progress when I visited the shops of Japan, and was informed by the proprietors and superintendents of the additions they intended to make in the line of tools and machinery to meet the needs of the war. Machinery was being put in for working on the ordnance of the country. I saw a number of heavy cannon in process of being turned for the Japan navy. Pumps, boilers, pipes and all parts of war craft were in and about the shops waiting for repair or reconstruction. Then, as the usual building and engineering operations seemed but little affected by the progress of the war, the shops and machinery on the usual line of work were in running order and some of them putting in new machinery. Wherever I went I met with instances of the advent of new machines."

"In the line of woodworking machinery and tools there seemed to be much advancement over the conditions prevailing when your correspondent visited the same districts in 1898. I was in Japan then, en route to the Philippines, and there seemed to be considerable prejudice against introducing new designs of tools or machines. The carpenters and the cabinet-makers clung to their crude designs of implements, some of which were totally unfit for the service to which they were put, from the standpoint of the American cabinet-maker. Some of our makers of woodworking tools and machines sent apparatus to the Japanese workers, and nowadays one can see the American devices in service in almost any of the woodworking shops of the country."

Some Truth About Our Trade with Japan.

HAROLD BOLCE, in the September number of the *Booklover's Magazine*, writes interestingly about Japan. He says in part: "It is a matter well-calculated to awaken American enthusiasm that progressive railway promoters from the United States are figuring on taking an active part in the new railway régime of the Sunrise Kingdom. It is not too much to hope that it may mark America's substantial and permanent invasion, commercially, of the rich fields of Asia. For there is a great amount of patriotic exaggeration in the United States in regard to the part America has taken in the development of modern Japan. It is a prevalent misconception, for example, that we have built up a great trade in manufactures with that country. As a matter of fact, if American exporters should sell to every individual of Japan's 45,000,000 of people one dollar's worth of goods in a year, our shipments of manufactured products to the Sunrise Kingdom would be quadrupled. In 1902, before the threat of war had affected the market in the Far East, the total value of articles of domestic manufacture sent from the United States to Japan was a little more than nine and a half million dollars."

Japan, nevertheless, is a country that wants our goods, manufactured or otherwise, and the only reason why trade has not been larger is the lack of transportation facilities, which will soon be overcome when James J. Hill's mammoth steamships, the *Minnesota* and the *Dakota*, are placed in service on the Pacific Ocean. The present war in the Far East will greatly reduce the number of able-bodied men in the country and either labor-saving machinery or its products will be in greater demand for some years to come. The excellence of American articles of this description is well known in the Japanese Empire.

A New Argument as to the Chinese.

IN an article, entitled "The Folly of Chinese Exclusion," in the *North American Review*, Mr. Hubert Howe Bancroft, the historian, condemns the policy of preventing the Chinese from coming to the United States. Mr. Bancroft characterizes the Chinese as the best working foreign element in the world, the least harmful to American politics and people. One seldom or never sees a drunken or disorderly Chinaman. He is seldom found in institutions supported at public expense. He is not found begging or soliciting. Indeed, the argument of the exclusionists, that the Chinese will not become one of us, marry our daughters, manipulate our primaries, run for office and rule the country, is only an enumeration of reasons why they should be admitted to do the lower class of work which white men do not care to do. Mr. Bancroft continues:

"Some have suggested danger to the Republic in thus leaving open the portal for the unrestricted inpouring of Asiatic hordes to kill and drive us into the eastern ocean. Yet, they must know that the laboring man in China dares scarcely go from one province into another unprotected. The price of passage to California is to them equivalent to a fortune, and the journey like the journey into another world. In times past, he who adventured alone had often to sell or pledge his wife for the necessary means, while contractors for coolie labor would not bring men over at less than some fixed price. As for the rest, the law of supply and demand regulates it. It is a matter of record that, when wages in California fell below \$15 a month, Chinese immigration not only ceased but the tide turned the other way. Chinamen will not leave home and face the cost and dangers of the ocean voyage unless they can have work at remunerative rates; and work is all that they desire."

TELEGRAPHY HARD TO LEARN.

Word Signals of American Phillips Code as Difficult as a Foreign Tongue.

BY the general public telegraphy is looked upon as a purely mechanical occupation, calling for comparatively little skill, judgment or intellectuality, and by many operators is regarded as a mechanical medium whose duty is merely to transfer the thoughts of superior minds from one locality to another.

Nothing could be more fallacious than this view, says a writer in *Popular Mechanics*, and those who hold such opinions have little knowledge of the real duties required of modern telegraphers. Telegraphers must have quick wits and splendid memories in order to succeed; their work is one of the finest of mental trainings and has often resulted in elevating telegraph operators to high stations in life.

Railroad telegraphy and telegraphy by the Phillips code, as now employed by the American Associated Press, require a high degree of intelligence. The modern telegrapher must be an expert typewriter as well as telegrapher, receiving news matter by ear and typewriting it at the same time. In the Phillips code there are about 2,000 combinations and signs which the operator must have literally at his fingers' tips. This code consists of words and signs which, in themselves, constitute a language nearly as difficult as the Chinese, and which are absolutely unintelligible to any but the expert operator.

Here is a copy of a press message recently sent out by wire:

"T potus, ixs wi km to Kevy his itn to oa sign t agm q Pip qsn."

Written out in full, as the receiver translates it on the typewriter, the message reads:

"The President of the United States, it is said, will communicate to King Edward VII his intention to at once sign the agreement on the Philippine question."

In the Phillips code nearly every letter in the alphabet is employed singly to denote some combination of words, and words are used to represent phrases. Thus "hog" means "in consequence of," "kaw" means "adjourned sine die," and "ckx" means "committed suicide." Here are the first sentences of a press dispatch as it was received over the wire. It was sent from Chicago. Leaving out the date line, it runs:

"A dsx fi at 2 oc tsm nry rekd t sto oqd bi Cx Smith Bros on Sta str. T origin f fi is unkn. Iw fs dgd bi ofc Obien dily bakf ofs q er floor. T flas wr shootg k entrance q alley es t awng hr ws in fls. T fi dpm tru an er, was cld to thr sto on Madison str es wn t engs arvd t flas wr mkg gd hedwa d rera prt f bldg es smoke was isng fm all prts f bldg."

The operator takes this message by ear and writes it off on the typewriter as follows:

"A disastrous fire at 2 o'clock this morning nearly wrecked the store occupied by Smith Bros., on State street. The origin of the fire is unknown. It was first discovered by Officer O'Brien directly back of the office on the lower floor. The flames were shooting out of the entrance on the alley and the awning there was in flames. The fire department, through an error, was called to their store on Madison street, and when the engines arrived the flames were making a good headway in the rear part of the building, and smoke was issuing from all parts of the building."

Improved Appliances for American Electric Cars.

IN a recent report of the Railway Commissioners of the American State of Massachusetts a notable decrease in the number of surface-car accidents in the State during the last year is credited largely to the adoption of methods and devices designed to better insure the safety of the traveling public. In this report the newspapers naturally find matter for congratulation, but, at the same time, it is pointed out that the success so far achieved in the direction of safety should be the strongest kind of incentive to further effort along the same lines. In this connection it may be interesting to note for the benefit of our readers some of the appliances or devices that call forth the approval of the commissioners.

The arc headlight is, perhaps, one of the most important. It brilliantly illuminates the track for a long distance in advance, enabling the motor man to avoid collisions. It also becomes an object of such glaring prominence in all the surrounding landscape that no one can be unaware of the approach of the car at night. It is more effective as a prevention of accidents than any warning signal yet devised. Very few if any arc headlights were used on street cars prior to 1902.

Among the newer safety appliances is the whistle which is now coming to be generally employed in place of the bell on cars which are equipped with air-brakes. A whistling apparatus upon any other than a car with air-brakes seems to be impracticable. With such favor, however, is the airbrake now regarded by the most progressive street-car managers that the time appears to be not far distant when all trolley lines on which cars run at high speed will have air-brakes on all their cars, as a measure of economy, if for no other reason. The cost, large as it is, will be found to be very much less than that of paying damages. Results achieved by the most up-to-date devices of this kind show that the most heavily laden trolley cars running at their highest speed can be brought to a full stop almost instantly.

Curiously enough, the motorman's vestible, which was opposed so strongly by many street-car officials a few years ago, is now declared to be

an important element of protection from accident liability. Moreover, they are coming to be regarded as hardly less needful in summer than in winter. This is because of the immense increase of speed, particularly on interurban lines, where the motorman not so protected is liable to be partially blinded by the violence of the wind, often mingled with dust.

A minor but by no means an unimportant safety factor is mentioned by superintendents and other officials referred to in this report. This is a newly invented "bicycle seat" for the motorman. It is no longer believed by his employers that he should be compelled all the time to stand. They say that he can do his work just as well, and be in much better condition for doing it toward the close of a hard day of strain upon the mind and muscles, if he is permitted, while at his post, to occupy this ingeniously contrived seat, which leaves him free and ready for every needed action, except perhaps in emergencies, when he can instantly change to a standing posture.

A subject that just now is being freely discussed among trolley engineers is that of employing a system of block signals on street-car lines, similar to those which have been adopted with such good results on all the principal steam-car roads. Progressive street-car magnates are extremely alive to the importance of doing in some way what is done by the block signals. Unfortunately, no satisfactory system suitable for electric-car service has yet been proved to be in existence. The difficulty is that the electric current used in moving the cars is liable to interfere with the current employed in operating the signals.

The commissioners' report notes the fact that on all the best-managed interurban roads in Massachusetts cars are now run in accordance with orders from the central offices transmitted through telephones. At each turnout on a single-track road, if it has up-to-date equipment, there is a telephone station. Within the past few months very many such telephones have been inclosed in booths. This method is analogous to that in use on all first-class steam railroads, where trains are run according to orders telegraphed from headquarters.

One of the most important safety inventions recently applied on trolley systems is an instrument by means of which the despatcher at the central office can almost instantly shut off the power all along the line, including every branch line, in case he learns that some one has blundered, and that, therefore, a collision is imminent. So near perfection has the present system of information at and control from the central office been brought that the despatcher comes very near to knowing where all his cars are throughout the most extensive street-railway system at each moment of time.

New Light for Photographing.

NOT since the dry plate came into use, a quarter of a century ago, has so important a discovery been made in the photographic field as the new light recently adopted by one of the leading photographers in New York. If it proves to be all that its sponsors claim for it, the new light will fall little short of revolutionizing the art of photography, more especially as regards the taking of portraits.

While the new light is in reality an electric light working through the fusing agency of mercury—a form of Crook's tube—it is far superior to any form of electric lighting hitherto applied to photography. By its aid results are achieved that from an artistic standpoint could not be approached by the old methods.

Flash light and electric light have long been used, but the first is chiefly valuable for emergency work, where the exposure must necessarily be short and natural light is unavailable, as, for instance, in making a picture of a numerous group. With arc and incandescent electric lights good work has been done and engravers who use the photographic process now work entirely with electric arc lights instead of sunlight.

So great has been the progress in the art that the exposure of one one-hundredth of a second on a cloudy day or a thousandth part of a second on a bright day will produce with quick-acting plates excellent results; while pictures taken, developed and printed, all at night, absolutely sunless photographs are common. But all these have heretofore lacked the qualifications for artistic lighting. Flash lights often make people look like lunatics, and the electric light effects have usually been very mechanical.

By the new system the inventor has been enabled to banish the sunlight from his establishment completely, and he says he can take better pictures at midnight than he was able to do formerly at noonday.

Process for Taking Colored Pictures.

DR. ROBERT W. WOOD, professor of experimental physics at Johns Hopkins University, U. S. A., recently has been granted a patent by the United States Patent Office covering all rights to color photography. Several American photographers claim to be the discoverers of color photography.

For five years the Patent Office had prosecuted an exhaustive research to ascertain the rights of the process to an exclusive patent which this affords all processes based upon it. The patent will protect Dr. Wood's rights upon the derivative invention.

The process at present is valuable chiefly from an academic standpoint. The photographs cannot be made on paper, but only upon glass slides, and a special viewing apparatus or electric lantern upon a screen must be used to get the optical results. Duplicates are easily made.

CARNEGIE'S LATEST GIFT.

Plans for New Technical Schools in America on a Colossal Scale of Liberality.

WHEREVER American enterprise has introduced American implements or machinery the name of Pittsburg, the great center of the American iron and steel industries, the city whose skilled mechanics have been responsible for so much of the marvelous advancement the last fifty years have seen in those industries, is familiar on the lips of men of affairs. Not so familiar as a center of educational progress is the name of the great industrial hive of the Middle East. And yet, owing to the imperial generosity of one of its sons—and, too, only a son by adoption—Pittsburg can claim rank, and have no fear of the comparison, with any city in the world where the intellectual advancement of the people, has its proper place in the scheme of civic administration.

Though Andrew Carnegie has scattered the wealth he accumulated in Pittsburg over the vast surfaces of two continents, his hand has ever been most lavish in the community that saw his rise from poverty to affluence; though he has given with no niggard hand to the country of his birth, his best and greatest gifts have been to the country of his adoption.

Speaking of Andrew Carnegie's generosity to Pittsburg a writer in the *Brooklyn Eagle* recently said:

"It includes the great library, from which the citizens of Pittsburg borrow no less than half a million books every year; the Music Hall, that gave to the Pittsburg Orchestra the impetus that has made of it one of the leading musical organizations in the country; the Art Gallery, in which the great masters of Europe and America compete for the annual prizes, and the Science Museum, which has conducted researches in South America, Mexico, Wyoming and among the relics of the moundbuilders of the Ohio Valley that place it in the first rank among the scientific and ethnological institutions of the country.

"These four are all housed in an imposing structure, at the entrance to Schenley Park, that forms one of the show places of the city.

"In addition to this, the institute includes six branches in the city limits, in all of which the libraries are the principal features."

Now comes the announcement of the approaching realization of a later, more liberal gift than all the others, the great technical schools, the initial work on which has been begun.

When the gift of technical schools was announced, a good many people seemed to think them superfluous. Yet, before the excavating was begun, before the first foundation stone has been laid, before the plans have even been drawn, more than 5,000 applications for admission have been received, and the number is being added to every day.

How much the Carnegie technical schools will cost no man knows—and the man who has promised to pay the bills does not seem to care. It is stated on good authority that the buildings and equipment probably will cost in the neighborhood of \$5,000,000. An endowment of \$2,000,000 already has been provided, but this will be very largely augmented. It will scarcely be less than \$5,000,000 and should so great a sum be needed it will be double that amount.

The schools are designed to provide technical instruction free for men and women in scientific and industrial pursuits.

In the outline program prepared by the committee six groups of buildings are designated.

The first group will contain the administrative offices, sample rooms for exhibition of the work of students, reception rooms, social rooms for men and women, auditorium, lecture rooms, club rooms, gymnasium, etc. A separate building will also be provided for the residence of the director.

The second group, or School of Applied Science, is designed exclusively for advanced scientific and technical courses. In it will be taught mathematics, drafting, machine design and construction, structural steel design and construction, general, industrial, electro and metallurgical chemistry, mining and railroad practice, applied electricity, steel manufacture, clay working and ceramics, glass manufacture and foundry practice. No other school in the world attempts instruction of the character that will be imparted here.

The divisions of clay working, ceramics, glass manufacture and foundry practice will be equally complete and practical.

The third group, for apprentices and journeymen, is designed for boys and men over 16 years of age, seeking instruction in the building, mechanical and allied trades.

In group four will be given both technical and trade courses for women.

The division to be conducted in the fifth group of buildings "for the application of design to industries," is ambitious in its purpose and unique in its scope. It will aim particularly to develop special talents along original lines.

The sixth and last group is to be devoted to heat, light and power service exclusively. The program prepared by the committee for the guidance of the architects in the preparation of plans, calls for approximately 600 rooms, with a total floor area of 592,000 square feet.

The leading architects of America have entered the competition and will submit plans for the various groups of buildings to the committee not later than September 10th. The award will be made as soon thereafter as possible, as it is desired to have the buildings ready for occupancy in the fall of

1905. However, it is the expectation that classes will be opened in many branches long before that time. If suitable quarters can be secured the work of the schools will be well under way this fall.

Canada Wants Its Own Consular Service.

AN esteemed subscriber of THE AMERICAN EXPORTER in Ottawa, Dominion of Canada, sends us the following interesting article regarding the desire of the Dominion for an independent consular service:

"As a step toward independence of Great Britain in the treaty-making power, Mr. Gervais, of Montreal, a leading supporter of the Laurier administration, submitted to the House of Commons before the prorogation of Parliament proposals for the establishment of a British Canadian consular service.

"The present consular service provided by the mother country has proved useless to Canada. It compares unfavorably with that of the United States, France and Germany, except in the Far East, where it is conceded to be without a peer. It has been asserted that England will never agree to give Canada a special consular service, but Mr. Gervais says:

"Let us demand it. This consular service should precede the granting of the right of treaty-making, which has been a subject of discussion for the last four years throughout Canada."

"The idea is that the service should be paid for by Canada and performed by Canadians fitted in high commercial schools and business training, appointed directly by Great Britain or by Canada. Canada's present commercial agents have no status in international law and are not recognized by foreign Powers. Their number is inadequate and their salaries are small.

"Canada, according to Mr. Gervais, does not want anything resembling diplomatic representation, but does want proper consular representation, which is one thing she has never had under British control.

"Canadian appointees would understand the needs of the country abroad better than appointees of British birth, and the service would benefit the empire because it would increase the wealth of the empire, which means benefit to the whole. If Canada is made 'three times stronger, richer and more respected than before, she will have threefold power to help the empire' in time of need.

"In England Mr. Gervais has discovered it is a general complaint of traders that the consular service is unfriendly, or, at best, indifferent to the protection of commercial interests. The information it furnishes is not of the right kind and comes too late.

"Canada's industrial and trading developments are being closely watched and reported by 350 foreign Consuls, of whom 175 are in the employ of the United States, while Canada's trade commissioners are about a score in number. France employs 550 Consuls in all parts of the world, Germany more than 800, and Argentina, Bolivia, Chili, Denmark, Greece, Italy, Mexico, Portugal, Spain and Switzerland over 100 each, yet the commerce of Canada is greater than that of any except the first two.

"The scheme outlined by Mr. Gervais contemplates the publication of an official paper setting forth tariff changes, movements in foreign markets, foreign commercial legislation, port and harbor regulations, and so forth; the establishment of headquarters at Ottawa, where tariffs and business publications and the latest commercial information can be seen, and also commercial museums of foreign manufactured goods at leading industrial centers."

American Pneumatic Tubes Abroad.

AN interesting account was telegraphed from London recently of a novel exhibition given by an American pneumatic tube company that is seeking to introduce its system of tubes into the British capital. The object of the exhibition was to give Englishmen an opportunity of seeing how the system is worked in America.

In order to demonstrate what the system is capable of, such varied matter as a complete suit of clothes, an egg, a live bird and a bottle of liquid refreshment were despatched through 800 feet of pneumatic tubes eight inches in diameter.

The proprietors of this tube system claim that it can carry in one day the whole quantity of mail matter despatched by the London, Paris, Berlin and Vienna tubes in a year and a good deal more besides.

The opinion of experts is that London requires a twelve-inch-tube system, the carriers of which will take three times as much as those used in America. When this is established it is estimated that the tubes will be able to carry 82 per cent. of London's internal parcel and letter traffic in a sixth of the time now given to its transmission, thus rendering the average cost much lower than the present scale.

Enormous Output of Iron Ore.

IN iron ore output the United States led the world in 1903, according to the report of John Birkinbine to the American Geological Survey.

It says that the quantity of iron ore produced in the United States in the year ending December 31, 1903, was 35,019,308 long tons, a decrease of 534,827 long tons from 1902.

The quantity mined in 1903 is, however, the second largest recorded, and is greater than the combined totals for the year 1902 of Germany, Luxemburg and the British Empire, which are the nearest competitors of the United States.

GERMANY AT OUR FAIR.

Exhibit Is a Credit to the Liberal American Policy That Made It Possible.

THE Louisiana Purchase Exposition is an undertaking of which not only the city of St. Louis, but the United States at large, may feel justly proud. It is a credit to the American people that such a vast object lesson of the nation's progress in the arts and sciences, placed side by side with examples of the best work of other countries, should have been made available for the practical education of the thousands who shall have passed through the turnstiles when the Exposition closes in November.

One of the chief causes of the success of the Exposition, from an international standpoint, was the liberality with which space was allotted to foreign countries and the unselfish manner in which they were afforded an opportunity to exhibit their products to the best advantage. This liberality of policy has been met half-way by many foreign countries, greatly to the advantage of the Exposition, and by none of our friends over sea more than by Germany, which has won for itself a place of prominence among the foreign exhibitors at St. Louis. Not only has Germany assembled a marvelously rich and varied collection of exhibits to illustrate her activity in every department of human enterprise, but she has grouped and displayed these with consummate ability and lavish disregard of cost. The old-time method of having a straggling array of show-cases representing the work of individual firms has been resolutely discarded by the German Commissioners. They have taken it as their true mission to exhibit Germany the nation. Collectivity is the secret of Germany's magnificent exhibit at St. Louis, and the lesson is one that will be taken to heart by other nations at any future international exposition.

In each and every World's Fair Palace, the noble pavilions erected by Germany as the distinctive setting for her exhibits attract the eye by the boldness of design, the elaborate yet always artistic decoration, the unity of purpose revealed as the key-note of the display.

By way of example, let us take our stand in the central hall of the German section in the Palace of Varied Industries. We can readily imagine ourselves in the castle of a king—the approach to the vestibules beyond a marble stairway, around us rich tapestries and paintings, statuary, stained glass, costly and artistic furniture—in a word, all the dignified accessories that make us feel we are in some great presence, in some right royal home. And so in all truth we are, for here are enshrined the choicest specimens of Germany's artistic handicrafts.

None can pass through the suites of magnificent rooms, each more wondrously fitted and furnished than the other, without realizing the masterfulness of the German character—the strength that turns even the highest art to practical purposes. No dwelling-place for show this, with tables too fragile to lean upon or chairs too exquisite for use.

The library is a library where a man feels impelled to read or to write, the music-room is a chamber thoroughly in tune with the harmonies of Mendelssohn and Beethoven. Here, again, is another room, the wall decoration of which is exclusively in wood. At first we fancy we are gazing on fine oil paintings—landscapes and seascapes, glimpses of town and river, portraits of men and women, representations of animal life. But soon the wondering thought comes upon us that all these works of art are produced by the natural coloring and graining of thousands of pieces of inlaid woods. Scrutinize this one panel. A lady in ballroom costume is holding a mirror in her hand and arranging her hair. The whole picture is in wood, from the black, coiled tresses to the sweeping folds of the silken dress!

It is, perhaps, by such comparatively little things that the far-reaching genius of the German nation is revealed. We are accustomed to think of Germany rather as a nation of plodding workers or spectacled scientists, wrapped up in their looms or their crucibles. The subtle delicacy of her art—art, be it noted, always with some useful purpose behind it—comes somewhat as a surprise. Elegance and national decadence have been associated ideas in most men's minds from the days of ancient Greece and Rome. Yet here at St. Louis Germany proves to us that the strong and the powerful nation, in her all-essential grip of the great basic industries, need not lose hold of life's daintiest refinements.

We have mentioned only one of Germany's dozen courts at the World's Fair, but the others contain their full share of interest and suggestion. Our foreign readers who go to St. Louis should pay visits to the Palace of Art and to the German Building close by. In the former are gathered together Germany's masterpieces of contemporary painting. In the latter we see everywhere the touch of the Imperial hand, in thought if not in act. For the rooms are filled with treasures from the Emperor's homes—things of interest, of beauty and of value far beyond estimate.

Then the conception of the German Building is itself a gift from the Emperor to the World's Fair, for it was he who suggested this splendid reproduction of his own Castle of Charlottenburg. On the sweeping rim of Art Hill, the noble edifice, its dull, time-weathered dome contrasting well with the white palaces and the sculptured Colonnade of States that are its neighbors, has become one of the most strikingly beautiful and distinctive features of the grand central picture of the Exposition.

Trolley Railroad Conveniences in America.—That American railroad managers are alive to the business wisdom of adopting every improvement that makes for the convenience and comfort of their patrons is shown by the

action taken this month of the Aurora, Elgin & Chicago Railway Company in establishing a dining-car service on its line. The new trolley dining car was put in commission about the middle of last month. While in equipment it rivals similar cars on the big steam railroads, no attempt is made to vie with the elaborate menu of the latter, a service of the light buffet order being offered instead.

American Wine Is Useful as a Food.

BY a splendid exhibit of its wines at the American World's Fair, California is seeking to prove that it can produce as fine and wholesome wine as the old European countries, and the multitude of fair visitors are given an object lesson in the value of wine as food. Wine is offered by California as an argument for temperance. That State has sent its chief of viticulture, Ferdinand A. Hober, to the Fair to take charge of its extensive wine exhibit. As a wine expert he says:

"Wine as a food drink is sure to succeed, but before that happy result can be possible Americans must learn how to eat. A nation that lives on pie, pickles and ice-water needs watching in the matter of drinkables, and if American women would take up the temperance question from the proper standpoint by providing a good, wholesome dinner with a bottle of pure, dry wine, such as claret, in their homes, there would be less activity on the streets after working hours. It has been clearly demonstrated that the nations which make wine and drink largely of their own productions are noted for sobriety. These people use wine with their food, but not between meals, and they are healthy.

"Some Americans are still wedded to the old prejudice that nothing is good to eat or drink or wear that does not bear the impress of a foreign label, but they will learn better in course of time. When a pure, sound, fermented wine becomes the national beverage, intemperance will be the exception and the country will be freed from the prohibition annoyance. California, with an area capable of supporting 100,000,000 people, with nearly every acre of its productive soil susceptible of viticulture, will not only become the vineyard of America, but will replace the wornout, phylloxera-stricken vineyards of Europe and American wines will be sought and appreciated all over the world."

Exhibition of Vehicles at St. Louis.

ONE of the exhibits that is of most general interest in the Exposition at St. Louis is the magnificent display of vehicles of all types in the Palace of Transportation. This display, though not as large as certain other exhibitions of like character, embraces practically everything in the vehicle line and holds much that is of interest to the country dealers.

Here, also, much time and money have been spent in decoration features and in providing an environment in harmony with the beauty and tastefulness of the articles displayed. In this department the attendance of interested persons has, naturally, been very large, for who is not interested in a handsome vehicle, and many sales and profitable contracts are said to have been consummated. In the Palace of Transportation is, also, a display of automobiles, a great attraction to dealers who have taken up the sale of these vehicles. This is the largest and most comprehensive display of horseless vehicles ever shown at an exposition of this character, and it is doubtful if any of the automobile shows has presented a greater array.

Liquid Hydrogen Produced at World's Fair.

IN the northeastern corner of the Exposition grounds at St. Louis, U. S. A., a building has been erected in which the first demonstrations of the manufacture of liquid air and liquid hydrogen at the low temperature exhibit of the British Royal Commission have been successfully carried out under the direction of J. E. Petavel. The plant is now in working order and is being tested thoroughly. Already liquid air and liquid hydrogen have been produced there. The manufacture of liquid hydrogen is one of the latest achievements of science. A series of lectures on this and other subjects connected with extreme low temperatures are given in the lecture room of the Palace of Liberal Arts, the entire exhibit being a part of the Liberal Arts Department of the Exposition.

These lectures are illustrated with a number of demonstrations with liquid air and liquid hydrogen.

American Furniture the Best in the World.

AMERICAN furniture is superior on account of the technical skill employed in its mechanical execution, and, although we have no distinctive national style, American designers produce some of the best examples of the "period" styles—such as those of the eighteenth century—now in vogue in every civilized country. Furniture of this type made in Europe falls apart in this climate and in our overheated houses. Indeed, dealers have to make over the pieces they import. But a fine piece of furniture of American design and American manufacture in one of these styles combines delicacy and strength to a remarkable degree. American manufacturers even find sale for their products abroad. A Philadelphia house sells furniture to members of the German nobility, and once filled a large order for the Sultan of Morocco, after his agents had examined the product of other countries. Several New York firms make furniture in the French style for customers in Paris.—*World's Work.*

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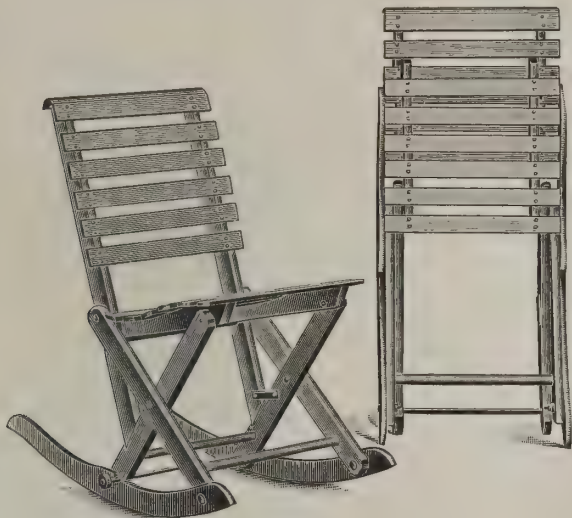
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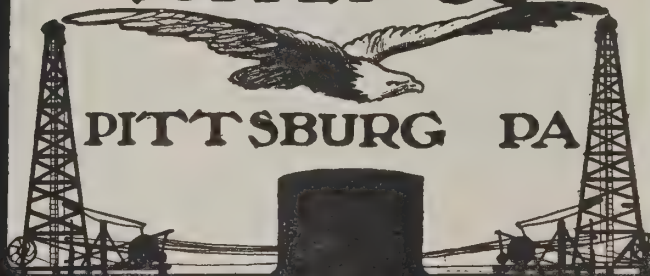
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ELECTRICITY'S MYSTERIES.

Skilled Engineers, Working to Adapt It to Commercial Uses, Know Not the Secret.

THAT electrical engineers in America are, with skill and ingenuity, meeting the requirements needed to bring the electric steed more and more to subjection to the will of its human master all who keep pace with the rapidly succeeding improvements in their line will readily admit. A recent writer, however, in a very untechnical article, puts his finger in a very untechnical way upon the sore spot that has ruffled the peace of mind of all the greatest thinkers in the electrical world—the mystery of the nature of the current. "They can evoke the giant," he says, "can direct its energy into a hundred channels, can control it with masterpieces of scientific and mechanical achievement, can destroy it. But what it is remains unsolved. It is still the great unknown."

The same writer traces in an interesting manner the development of the utilitarian phase of electricity. "The principle involved in producing the current and adapting its energy to driving machinery and cars and of creating light is simple," he says, "but, why the chemical bath produces the electric current, what the current is and how it instantly transforms the iron into a magnet are mysteries which not even Faraday, Edison or Thomson have attempted to explain."

"For many years efforts were made to obtain motion and power from electromagnets of large size arranged in groups, similarly to the spokes of a wheel, to revolve rapidly past each other; but it was not until the discovery that the battery could be entirely eliminated that the possibilities of electricity as a factor in the great industrial world appeared."

"Some time in the sixties Professor Henry saw his little son playing with a discarded electro-magnetic machine, without battery or chemicals and was led to the discovery of the true generator, and the dawn of the electrical age, with all its marvelous wealth of scientific and commercial exploitation and success, opened."

"Crude and clumsy apparatus was quickly designed and built, and, on being belted to a steam engine, gave an amount of current which no instrument then in use could measure. These early generators were called dynamos and were used exclusively to produce arc lights. A few years later the discovery was made that if a duplicate generator was carried to any desired distance and connected by wires to the first a corresponding rotation was obtained. The current generated in the first machine went over the wire to the second machine and operated it. This was another surprise."

"That its value was instantly appreciated is shown by the fact that in Cleveland, U. S. A., in 1884, without waiting to build new machines, two Brush arc light dynamos which had done service for several years were obtained. One was connected to an engine in a convenient building, the other was attached to the axle of an old horse-car. A wire was strung along the track and the first electric car was commercially introduced, and electric traction and electric power were before a wondering world."

Problem of Distributing Electricity.

A RECENT issue of *Cassier's Magazine* was devoted entirely to electric power. Much valuable information was given concerning the systems for the distribution of power in America and other countries. It was long ago established that the distance to which electricity could be sent economically depended mainly upon the voltage or pressure employed. The higher this is, the further the current will go and the smaller will be the "line losses" with a conductor of a given size. At present there are two transmission lines in America on which 55,000 volts are used successfully. One, 65 miles long, is in Montana. The other, 80 miles in length, is in Canada. Some of the great transmission systems in California are equipped with three sets of transformers, one capable of raising the pressure to 60,000 volts, and the others working at a lower voltage. For reasons which are not given, the maximum pressure has not thus far been adopted on the Pacific Coast, but it is said that a Mexican line 101 miles long has begun to work at 60,000 volts. The difficulties of insulation are so great that anything higher may not be witnessed soon. However, further advances are probable. Speaking of a plan to transmit electric power from the Alps to Paris, a distance of 300 miles, Paul M. Lincoln says that it is not feasible to-day, but the feat may yet be attempted, when pressures that are "within the bounds of reason" may be safely handled.

Other improvements bearing on transmission have been effected in the last few years. Some of these relate to the dynamo, but that machine is now so nearly perfect that a better one is scarcely possible. Great gains have been made in insulation, as has already been pointed out, and also in line construction. A trifling change in the arrangement of the three conducting cables of a system like that between Niagara and Buffalo, in America, has materially diminished the opportunity for mischievous interference by the small boy. Success in the distribution of electricity has been still further promoted by the increased capacity of switches.

A movement of much significance in England is the application for charters for generating plants big enough to furnish current to a number of adjacent communities. Something of the sort is already accomplished in America, where the source of power is water. The British idea is to use coal. The relative cost of hydraulic and steam power varies with locality. In some places one will be cheaper, and in some the other. Whatever be the means

employed to drive the dynamo, though, wholesale production is less expensive than manufacturing on a small scale. It has been estimated, for instance, that if a plant be established which would be able to supply all the towns within a radius of fifty miles, only one-third as much fuel would be needed as would be consumed if each community had its own lighting and power station.

This is not all. Concentration would effect still another economy. Mr. Stillwell, electrical engineer for the New York Rapid Transit Commission, says that a central station having a capacity of only 50,000 horse-power would rarely fail to do the work previously performed by separate plants whose output mounted to 75,000 horse-power, and that the difference might be even greater. In equipping isolated stations it is customary to provide machinery that will meet the maximum demand made upon it. The load usually varies between wide limits in the course of a day. Hence, by substituting one plant for the many, the total consumption would become more regular, and the maximum would never rise far above the average, especially if the uses to which the current was put were dissimilar.

Wireless Telegraphy in Clock Timing.

THE suggestion emanating from Mr. Nikola Tesla many months ago that any number of clocks might be operated synchronously over a large area by the distribution of energy through space by means of magnetic waves appears to have been acted upon successfully by M. G. Bigourdan, who communicated the result of his experiments to the French academy in a paper which was reprinted by several American scientific journals.

Of course, the idea of the electrical distribution of time is not a new one. In Europe as well as in America standard time is transmitted from the official observatories by means of master clocks fitted with electro-magnetic devices and connected by wires to receiving instruments in various cities. In the United States this method of synchronizing clocks is also used in large manufacturing establishments, in connection with mechanical time-recording devices for workmen, this preventing any suspicion of irregularities or tampering with the mechanical timekeepers in the different departments. The applicability of space telegraphy for this purpose extends its scope immensely, and since the object is attained simply by the transmission of uniform impulses, it is really one of the simplest applications of the method which can well be imagined.

In M. Bigourdan's experiments as described by him a master clock was arranged to make and break an electrical contact every second. This operated a relay, which in turn discharged current into the primary circuit of an induction coil provided with an oscillator. The secondary circuit of the coil thus gave an oscillating discharge of very brief duration at regular intervals of one second. The two poles of the coil were connected, one with the earth and the other with an antenna of several meters in height, and by this means the electric waves acted upon a number of receivers, these latter beating regularly at intervals of one second in accordance with the action of the master clock.

Two forms of receivers were employed, one being simply a radio-telephone of the Popoff-Ducrotet system, in which the seconds beaten by the master clock were very clearly heard. The other form of receiver was similar to that of a space telegraph system, the Morse receiver being replaced by a recording chronograph with pen and traveling strip of paper. These operated in a very satisfactory manner, and with the paper moving at the rate of one centimeter per second the time could be recorded with a precision of 0.02 to 0.03 second.

Although the apparatus employed by M. Bigourdan in his experiments was very modest in its proportions, it gave excellent results over distances of two kilometers, and would doubtless have served for greater distances had opportunity offered to install the receivers. There appears to be no doubt that such a device as it was would answer perfectly for the electric distribution of accurate time over the entire area of large cities.

Carrying a House Over a Hill.

PERHAPS it was not so remarkable after all, considering where it happened, but the story told in *Popular Mechanics* about raising a brick building 180 feet on the side of a hill is interesting: "A three-story brick house weighing hundreds of tons, successfully climbed a steep bluff 160 feet high at Kansas City (U. S. A.) without cracking a pane of glass. Upon reaching the top the house was rolled along 300 feet to its destination. It had been built some years ago in a location which was no longer desirable for residence purposes. It was a case of tearing the house down or moving it. The house was carried on a strong framework of timbers, and raised by the turning of 300 jacks divided into 30 groups of from eight to twelve each, from three to five groups being located under each sill. At a signal given by blowing a whistle, one man started at the end of each group and gave each jack in succession one-half turn. After all the groups had been turned another signal was given and the men returned to the starting points, screwing each jack another half-turn and so on back and forth, simultaneously, screwing the jacks so as to raise the building uniformly about one-half inch at each round trip."

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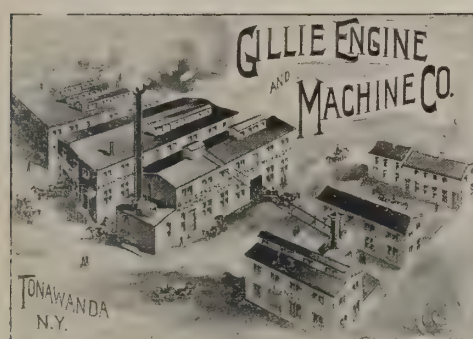
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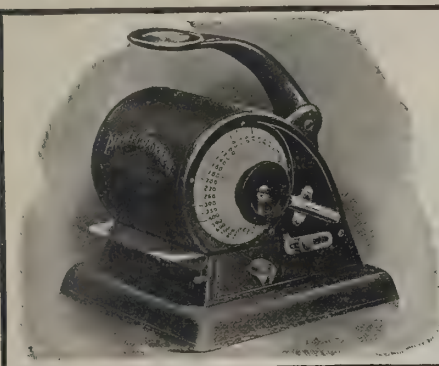
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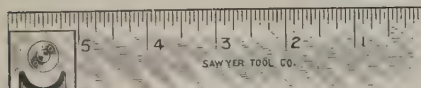
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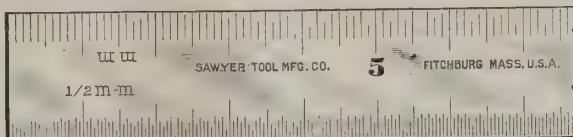
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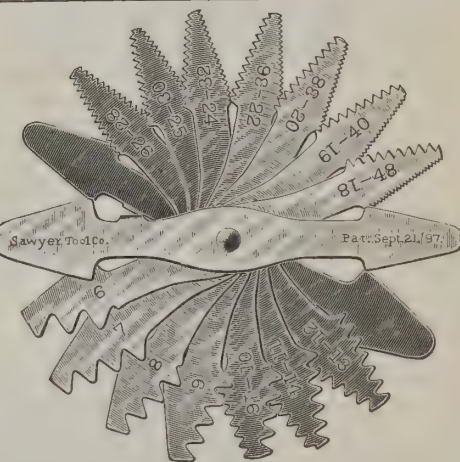
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AUTOMATIC TELEPHONY.

Invention That Combines Telephone and Phonograph for Ordinary Use.

THREE important inventions, or, rather, one invention with two important auxiliary applications recently reported, are deeply interesting the scientific bureaus of the big American telephone companies. If all that is claimed for them be true the telephone service of the world will receive a tremendous impetus and its value be immensely increased. By means of this new addition to telephony, which is credited to a Dane name Paulsen, it may be said that a telephone talks of itself. In other words, it will save a message that comes in your absence and repeat it to you on your return.

By far the most important of the three inventions is the telegraphone. A telephone subscriber wishes to leave his office for a time yet is anxious that he shall not miss any messages which may come while he is gone. He switches the telegraphone to the telephone, and on his return looks at a dial on the former contrivance.

There is an indicator on the dial, and if this has moved he knows at once that some one has called him up. He sets it in motion and it repeats the message, word for word, as clearly and distinctly as it was originally uttered. The derivation of the word "telegraphone" is thus made clear.

For long-distance messages—for a newspaper, for instance—this apparatus should, it is argued, be invaluable. Instead of a shorthand writer having to take the message more or less slowly, it can be recorded by the telegraphone and be repeated by it at any speed desired any number of times.

It is also possible for a person to sit beside a telephone with the ordinary receiver at his ear and take the message at the same time it is going into the telegraphone. Thus he is able to make sure that the message is clear and distinct. If it is not so he can ring up the central office and stop further transmission until the defect is removed and an unobstructed line provided.

Curiously enough, however, the message reproduced by the telegraphone is clearer and more distinct than the original. An experiment was recently made with words spoken in English by a foreigner. Over an ordinary telephone his accent made understanding difficult. Over the new instrument every word was clear. This is doubtless caused by the sharp metallic tone in which the instrument speaks.

The second apparatus, the disk telegraphone, is another application of the original invention. It is a recording instrument, but is not used in connection with the telephone. It is merely a registering apparatus, like a gramophone. Nevertheless, it might be of immense utility to a newspaper correspondent when the saving of time and the necessity for secrecy are important.

Imagine, for instance, a war correspondent at the seat of action. He takes with him his telegraphone. It is contained in a box which can be easily carried in the hand or strapped to the saddle. During the progress of the battle he speaks a description of the scene passing before him into it. When finished he makes the disk repeat the message to assure himself that all is correctly recorded, unscrews the disk, which is a thin steel plate three inches in diameter, places it in an envelope and sends it to his paper.

When the disk it received at the office of the paper there is not even any necessity for the message being written out. It can be placed in a telegraphone and the latter set alongside the linotype operator, and it will dictate the story to him at any speed desired. The fact that the steel plate bears no signs of any sort insures complete secrecy. As soon as the plate has delivered its message it is demagnetized and is again ready for use.

The telephone newspaper is an apparatus by which the same message can be forwarded simultaneously from one telephone to fifty or even a thousand centers. Suppose, for example, a newspaper syndicates its war news and has to distribute it to a dozen different newspapers. As soon as a dispatch arrives it rings up all the subscribing papers and sends the news through in a single message, instead of ringing up and ringing off a dozen times and repeating the message afresh every time.

Telephones at American Street Corners.

IN some of the more progressive cities in America, telephones available for use by the general public, and placed at street corners either on the telephone pole or on the same post with the United States mail box, are among the conveniences demanded by the requirements of modern life in this country. Keyless stations opened by merely turning a handle and which contain the pay slot and a directory are all the equipment needed, hollow iron posts admitting the necessary wires.

In some places the agreement with the company insures that, for the privilege of placing the telephones, all emergency calls, such as police, fire department and hospitals, may be free of charge. This makes the system a public benefaction, saving time in case of fire or accident, and to an extent protecting the citizen. These stations are paying investments to telephone companies, as they require little extra wiring and cost little to maintain.

George A. Long, in the *American Telephone Journal*, says there is no reason why these stations should not supersede the so-called police telephone systems now in use. Police could send in their reports to headquarters over the public stations and the police box would no longer be needed.

Such a system in residential sections of cities, where in use, has proved to be of great public benefit, as it would in parks and along boulevards and roads frequented by pleasure-seekers. How often the automobilist would find it of use! How often it would save some person from going long distances to the drug store or grocery!

Use of Telephones in America.

IN a discussion on the comparative use of the telephone in America as compared with Great Britain, Mr. Herbert L. Webb, an Englishman, contributes some interesting views to a recent number of *Cassier's Magazine* (New York). He states that New York and suburbs, Boston and Chicago, where there are 325,000 telephones in use, together have an aggregate population less than that of greater London, while they have in use a somewhat greater number of telephones than the whole of Great Britain and Ireland. Mr. Webb is much surprised at the rapid rate with which the use of the telephone is being extended, but is even more surprised that there is no apparent slackening in the rate of development.

To explain this, the most important reason given is that there is no government monopoly of telephones in America. The telephone has here consequently escaped the blight of official interference, which has restricted its development in every European country.

The author thinks that the telephone service in American cities as a general rule is excellent. The answer to a call is quick, and the work of completing the desired connection is rapidly and accurately performed. One important factor in the development of the telephone, he says, has been a policy which is distinguished by two main features—first, to bring the service to as high a pitch of perfection as possible; second, by means of educating the public to the use of the service, and by making rates calculated to appeal to all classes of the community, to create a demand for service so widespread as to be practically universal. One of the important factors in the first of these has been the general adoption of the central energy system. In the other, the adoption of the message rate instead of the flat rate has been the most important influence. In fact, it is since this method of charging was adopted by the New York company that the remarkable development began.

Languages Taught by Phonograph.

WHEN the phonograph was first invented it was suggested that it would revolutionize the teaching of languages. This prediction cannot be said to have approached verification until quite recently. Visitors to the American Exposition at St. Louis, however, have been afforded an opportunity to witness lessons in languages by the phonograph, which are given in the school in the Model street.

All of the obstacles that barred the phonograph from this field of usefulness have been removed, it is claimed. Now the instrument does its duty as a language instructor with the utmost precision. This system has made the success of a correspondence school, has been introduced into several colleges, and several learned professors have expressed their belief in its practicability and value.

The fundamental idea is first to familiarize the ear with the pronunciation of the language one desires to learn. A professor with an impeccable pronunciation has spoken into the instrument, which has recorded certain sentences. Printed on a board placed beside the apparatus are the phrases side by side with their English equivalent. The entire list is gone through very deliberately by the phonograph, each word being enunciated with great distinctness. When the ear becomes accustomed to the strong sounds, the speed is accelerated until finally the words are spoken as rapidly as in ordinary conversation.

Four languages—English, French, Spanish and German—are taught by phonograph at the American World's Fair. In each language 9,000 words accompany each course—a comprehensive vocabulary. Thirty conversational lessons for words in ordinary use are provided.

Ideal Shallow Water Craft.

TO Edward O'Donnell, municipal engineer of a small city in Minnesota, U. S. A., belongs the credit of solving a problem that has puzzled many a boat builder. Mr. O'Donnell has built, launched and successfully navigated on the river that flows through his city a unique gasoline launch. His was the difficult task of making a boat that would meet varying conditions, the most serious trouble being that during the summer the river dries up until in many places there is scarcely a foot of water on the bars.

The usual screw propeller requires two feet of water to run and a stern paddle wheel did not suit Mr. O'Donnell's ideas. He overcame the difficulties by placing behind the boat a regular battery of seven six-inch propellers, which will work in eight inches of water and drive the boat upstream at a speed of twelve miles an hour. Rods of steel projecting backward from the bottom of the boat, under the propellers, keep them from striking snags. The boat will run over a floating log without any difficulty.

By placing the craft on a steel frame supplied with automobile wheels and gearing the boat is converted into a serviceable touring car.

Minnesota is not the only place where rivers run dry in summer, and it is quite conceivable that Mr. O'Donnell may find a field for the exploitation of his invention.

The B. F. Sturtevant Company, of Hyde Park, Mass., U. S. A., have recently published a new catalogue of their Economizers. It contains full details of the Sturtevant Standard and Pony Economizers, their comparative merits, the advantages they afford, their various sizes, weights, accessibility for repairing, etc. This catalogue also deals with the subject of both mechanical and natural drafts, and must be of interest to all steam users. Copies of the same will be sent free to our readers who write for them.

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Band Saw Machines, both Foot and Belt Power.

Sausage Stuffers and Lard Presses for Butchers' use.

"Ohio" Feed and Ensilage Cutters, Chaff Cutters, Fodder Shredders and other machines.

Catalogue and discount sheet embodies gross weight, cubic measurement and cost of boxing, and prices are F. O. B. cars New York.

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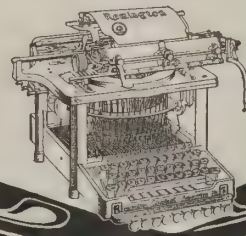
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Artistically Designed Ribbon and Metal Fob Chains.
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ornamentation.

HIGHEST QUALITY.

POPULAR PRICES.

CORRESPONDENCE SOLICITED.

Order through any buying and shipping agent in New York or
elsewhere.

A GREAT IMPLEMENT SHOW.

Fine Display of Cultivating Machinery on View at the American World's Fair.

IN accordance with the avowed purpose of the management of the American World's Fair to assign to agriculture a leading place at the Exposition held in celebration of the one hundredth anniversary of the Louisiana purchase, that gave to the United States 1,000,000 square miles of rich agricultural land, the building apportioned to agricultural exhibits is the largest on the grounds. In fact, it is the largest building ever erected for exhibition purposes. That the applications from intending exhibitors aggregated double the 500,000 square feet available for exhibition purposes in this huge structure is a striking demonstration of the important place agriculture occupies among the industries of the United States.

To the makers of agricultural machinery about one-fifth of the space in this huge building was allotted. They would gladly have filled and used twice or three times as much area. However, the implement manufacturers of the United States are to be congratulated on the excellent use they have made of the opportunity afforded them. Even if the display had been larger it could scarcely have been more representative in so far as the quality and variety of the implements exhibited are concerned, and, as it is, it is very doubtful whether so great and so attractive a collection of agricultural implements will ever again be gathered under one roof during the present generation.

No better situation could have been chosen than that assigned to the display of implements in the huge Palace of Agriculture. One end of the building is given up to the exhibition which is indeed a representative showing of farm machinery and utensils of every description and a magnificent advertisement of the high plane of perfection to which American manufacturers in this line have attained.

No implement employed in tilling the soil, seeding, planting, harvesting and preparing crops for the market is missing, and in and near the Palace of Agriculture are also to be seen wind-mills, dairy machinery, and the various utensils which relieve the burden of the household work on the farm, machines which progressive dealers the world over are now handling with as much profit as they derive from their business in plows, cultivators and harrows. No person engaged even remotely in agriculture can fail to be interested in the exhibit.

Men who have been schooled in the manufacture and actual operation of machines and who possess the ability to explain, not only the mechanism of the various implements and the principles on which they are constructed, but to show wherein labor is saved, durability insured and the yield of crops greatly enhanced by the use of these tools have charge of the exhibits. Time spent with these experts will be valuable to any visitor, for he cannot help but learn new points of interest whether his interest be that of a dealer or a buyer. Thus far many of the visitors directly interested in farm machinery have been from abroad, and among these keen interest has been manifested. The labor problem in many foreign countries is becoming serious and the farmers realize that the time has come when they must employ labor-saving farm implements to a greater extent than formerly. If this exhibition accomplishes nothing else it will probably be the means of extending the American implement trade in parts of the world not yet reached by our enterprising manufacturers. It is stated that some new and important contracts have already been made and other deals are being negotiated.

Closely allied to the exhibition in the Palace of Agriculture are those in the Palaces of Transportation and Machinery and in the three buildings, dealer, jobber, manufacturer, salesman and buyer will find large and comprehensive displays of the things which interest them and, it may be added parenthetically, some things which should, but have not yet found their true representation in the retail field at large. Here the agricultural implement, the farm utensil, the various labor-saving, profit-earning devices for the agricultural household; over there the vehicle, no longer a luxury, brought within the means of all, yet lacking nothing of beauty and durability.

Further along may be seen the gasoline engine, that wonderful motor which has solved the problem of power on thousands of farms and is destined to win the universal popularity it so well deserves. Not one of these displays but will inspire in the manufacturer renewed effort to reach the goal of success in trade, none but will educate the buyer and none but will kindle a feeling of satisfaction in all who are factors in the marketing of them.

Desks.—In the manufacture of office furniture, such as roll-top or flat desks, American firms have made wonderful progress and some of the desks offered for sale are really works of utility and art combined. One of these is the Moon Desk Company, of Muskegon, Mich., U. S. A., which has recently issued a catalogue showing just what it has to offer in this line to the export trade. Copies will be sent free on application, to foreign importers.

Sultan Likes American Ships.—So pleased was the Sultan of Turkey with the new Turkish cruiser, *Madjidia*, built in the United States, that he sent a complimentary telegram to President Roosevelt and a personal message to United States Minister Leishman, commending the high qualities of the American shipbuilding industry. The ship was taken to Mytilene, Turkey, by American officers and crew.

American Farm Implements in Spain.

WHILE probably the majority of our readers will agree that war between any two countries is a thing to be deplored, and that the recent contest between Spain and the United States offered no exception to that axiom, it is a source of gratification to learn that even that unfortunate struggle, like most of the ills which humanity is heir to, has turned out to be a not unmixed evil. Recent advices from the United States Consul-General to Spain go to show that one of the results of the war—now that the feeling of mutual bitterness almost inseparable from a state of actual hostilities has subsided—is the establishment of decidedly more friendly commercial relations between the two nations. This has been shown by a gratifying increase in the demand for American products and more especially for farming implements manufactured in this country.

Consul-General Lay has in a late report laid before the Department of Commerce the result of a sort of symposium of an investigation along this line made by the consular agents under his jurisdiction in the several provinces of Spain. Briefly summarized, the report states that while the cost of hand labor is very cheap in all parts of Spain and does not seem to justify the farmers owning very small farms using even the modern plow, on the larger farms agriculturists not only can but do use labor-saving machinery of the most recent types.

In the northwestern and southeastern districts and the country on the northern coast the outlook for selling modern agricultural machinery is not bright, but in the center and in the southwest of Spain the farms are large and offer a virgin field for our agricultural machinery. Until 1900 modern machinery was practically unknown in Spain, and reports from all parts of the agricultural districts show the larger farmers and experimental farms are all commencing to use modern machinery.

As an illustration of the progressive Spaniard's readiness to adopt modern ideas, when shown their practicability, Mr. Lay cites the fact that two years ago a Spanish company constructed a cement mill, situated south of the Spanish Pyrenees, and in order to carry the American machinery to equip this mill from the nearest railway station to the works purchased a locomobile from California. A timber-limit owner having seen this locomobile in operation, realizes its advantages over mule power and is now negotiating for the purchase of several American locomobiles.

The following extract from a letter to Mr. Lay from a practical agriculturist in the district of Valladolid, who has a farm of 6,990 acres, is one of the most interesting items in the report:

"From the United States I have three 5-foot binders and seven 6-foot binders, some cultivators, some weeders and harrows, five wheat-sowers, potato sorter and digger, a thrashing and straw-cutting machine and a 12-nominal-horse-power locomobile, besides many other machines which I purchased through advertisements. The implements having the largest sale and use here are American, English, German and French plows, American and German machines for sowing cereals (mostly American) and American harvesting machines.

"American agricultural implements give satisfaction and good results and trade could be increased if the implements were cheaper. I do not mean by the manufacturers, but by the sellers here; between the exchange, the duties, freight and the large profits of the seller, the implements cost so much that there are few who can pay the prices."

The consular agent at Santander, in Castile, a province that is in greater part devoted to the production of wheat, speaks very highly of American implements. He says that reversible plows, especially those working superficially, mechanical sowers, reapers, rakes and winnowing ventilators are the implements in most general use. "In general," he asserts, "agriculturists having made practical experiments prefer American implements. The agriculturists, noting that American machinery is better fitted for the uses for which it was intended, give it the preference, as it requires less power to work it—a most decisive reason in a country that is forced to rely on animal power."

The most practical means, this agent believes, to increase the sale of American implements is the establishment of agencies with permanent exhibitions of the machines and implements affording visitors a practical illustration of their working and the advantages to be gained by their use.

A Factory Utopia in America.

THAT kind, thoughtful treatment of employees is a paying investment is thoroughly believed in by the managers of one large American factory.

They are especially considerate of their female workers. The company has special cars that stop at the factory gate in the evening at quitting time to carry the women to their homes. Then, in order that the 500 women employed may not be lost in the crowd of 3,000 men employed in the factory, the women stop work fifteen minutes before the men's whistle blows.

A recess of ten minutes in the forenoon and again in the afternoon is allowed to all the women. During these periods calisthenics are practiced.

Dining rooms fitted up especially for the employees are provided. For the sum of 5 cents the women can obtain a good, healthful luncheon. In the men's dining room the lunch is somewhat more elaborate and the price is 12 cents.

The factory is also fitted up with bathrooms where the working people may bathe in the company's time.

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

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List, \$3.00

9 1/4" Section
List, \$4.15

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THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 1/4 cubic feet. This cut represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/4 inches deep and 32 1/4 inches long. Made of selected quarter-sawn oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
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IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warehouses, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

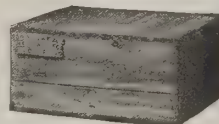
ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warehouses and on shipboard.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dower-plugs; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.

Top Section
List, \$3.00

9 1/4" Section
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9 1/4" Section
List, \$4.15

11 1/4" Section
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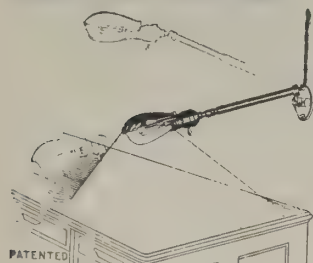
11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

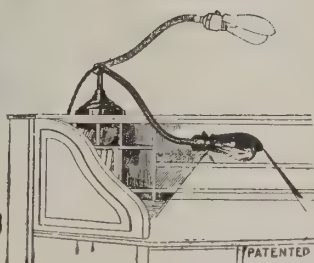
13 1/4" Section
List, \$5.25

Base Section
List, \$2.65

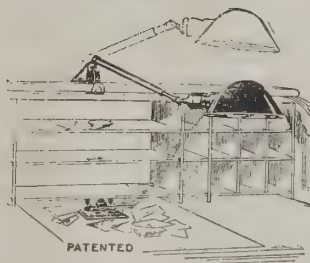
ELECTRIC LIGHT FIXTURES



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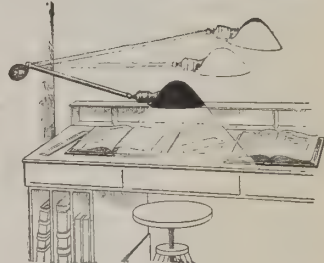
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By the use of the fixtures illustrated above the electric light can be adjusted to any conceivable position. The arm is telescopic and extendable, and is mounted on a ball-bearing friction joint. They are without question the most adjustable, practical and durable fixtures on the market.

WRITE FOR CATALOGUE AND DISCOUNTS.

WARREN BALL-BEARING FIXTURE CO., 4 WEST 15th STREET, NEW YORK, N. Y., U. S. A.



U. S. Separator, Dairy Size.
With Low Supply Can.

The Improved United States Cream Separator

Was awarded **GOLD MEDAL** (The Highest Award) at the Pan-American, Buffalo, N. Y., U. S. A.

GOLD MEDAL Paris Exposition, Paris, France, 1900.

And the official records show that in the Model Dairy at the Pan-American ITS WORK EXCELLED EVERYTHING, averaging .0138 for 50 consecutive runs and WON WORLD'S RECORD for practical every-day work.

THE UNITED STATES SEPARATOR STANDS WITHOUT A PEER, THE MOST THOROUGH SEPARATOR MADE.

Dairy size U. S. Separators run easily by hand but can be operated by power if desired. Capacities range from 150 to 700 lbs. an hour.

PRICES FROM \$50.00 TO \$165.00.

Large illustrated catalogues sent postpaid for the asking. Orders received through export commission houses. Please mail duplicate order to us.

VERMONT FARM MACHINE CO.,

ESTABLISHED 1873.

Cable Address: Vermonfarm, Bellows Falls.
Lieber's, W. U. Int. and Commercial Codes.

Bellows Falls, Vermont, U. S. A.

Modern vs. Ancient Threshing.

AN interesting testimonial to the advantages of threshing grain with a modern American outfit as compared with the threshing methods of the Patriarchs and which, until recently, were the only ones in use in the Island of Cyprus, is furnished in a recent letter from one of the leading agriculturists of the island to its Governmental Director of Agriculture.

The Board of Agriculture of Cyprus has for some years been desirous to introduce into the island the use of American threshing machines. Mr. Gennadius, the director of agriculture, has taken up the subject and overcome the special difficulties which presented themselves in consequence of its being necessary when threshing the grain to prepare the straw in such a manner as to make it immediately available as fodder for stock. Thanks to his exertions and special skill, a machine has been produced, after much trouble and many experiments, which, during the last year, proved entirely successful both in separating all the grain, and grading it at the same time into the different qualities, and in "chopping" or preparing the straw for fodder. These results are obtained at one operation.

After summing up the multitudinous disadvantages of the old system by the statement that it involves a total loss of the grain amounting to 10 per cent., the Right Rev. the Abbott of Kykko, the correspondent above alluded to, goes on to say:

"Last year having threshed our cereals by the Government machine we avoided the above risks and losses and we obtained the following benefits:

"We gained four entire months' time which we devoted to plowing up our fields. Having thus prepared our fields early we succeeded in sowing for this year 200 donums of land more than we usually do with the same number of teams.

"The surplus of our cereals was sold quickly and for a much higher price than that of the market, because our grain, being cleaner, was preferred by the purchasers.

"The quantity of cereals stored for our own use was and is still kept without being attacked by the weevil.

"The stored straw is of far greater quantity and of better quality.

"The front sieve of the Government threshing machine has the advantage of dividing the straw into two qualities. The first quality forms two-thirds of the whole quantity yielded and is exactly as fine as the straw obtained by the native system of threshing, but cleaner. The other third, which forms the second quality, is somewhat longer than the straw prepared by the native system; however, it is sufficiently soft and proper for feeding purposes. But if it is wanted shorter, it can easily and cheaply be obtained so by rethreshing on the native system. Last year, having tried this rethreshing, we found that all the second-quality straw yielded by the machine in two days can be rethreshed in a day by four pairs of ponies.

"Thanks to the front sieve, not only the straw is divided, but also all grain coming out with the straw is collected and put aside. These grains are the largest and form the tenth part of the whole crop.

"That the American machine will promote not only the farming, but also the breeding of stock in the island, is demonstrated by the following:

"With the surplus of straw obtained by threshing with the machine many cattle may be fed.

"It has been noticed that the cereal husks which by the native system of threshing are totally lost (because they are turned into dust), by the threshing machine are collected and put aside, and are eaten with avidity by sheep and goats. Therefore they may be used as regular food for the flocks during the period of scarcity of other food. We will try this experiment shortly in order to see the result."

Tide Predictor Is an American Marvel.

IN constant operation in the Coast and Geodetic Survey, at Washington (U. S. A.), is a machine that is one of the most wonderful pieces of mechanism in existence. It is the machine which predicts tides. Every year its predictions are issued for the benefit of mariners and the shipping industry, embodied in a volume under the title of "Tide Tables." At least a dozen elements are necessarily known before a tide can be predicted for any station with any degree of accuracy, says the *American Inventor* in discussing the merits of the Tide Predictor in a recent issue. By a process of selection and exclusion the tide is resolved into a number of factors, which are practically constant for that particular station, and by means of which, when known, a somewhat intricate and lengthy process of mathematics can accurately predict the coming tides for an indefinite period in the future. Such predictions, however, are, of course, subject to the error caused by abnormal meteorological conditions, such as storms, hurricanes, etc.

When these data have been obtained, instead of employing a corps of computers, the Coast and Geodetic Survey has recourse to the wonderful tide-predicting machine. It is provided with nineteen dials, taking account of nineteen factors of a tide, and these are set by means of pointers before the machine is operated. Once these dials are set for any station a clerk can turn a small handle to the left of the machine and read off from a dial the times of occurrence of high and low tides for an indefinite period ahead and the depth and height of such tides. This performance is the more wonderful when it is considered that every factor has an influence on every other factor.

Although it would be impossible without illustration to explain intelligently the complicated mechanism of the predictor, and it must be seen and

studied to be appreciated, any one can understand the statement that the machine actually does the work of forty computers, and that it has been doing it since 1883, when the machine was completed at a cost of \$3,500. It was the invention of Prof. William Ferrell, who gave the invention to the United States Government.

Effective as this machine is, however, it is not to be compared for a moment with the one at present being built at the instrument shops of the Coast and Geodetic Survey. The new machine will take account of thirty-nine factors of a tide, instead of nineteen, and will not only give the time of high and low tides, and their depth and height, but will give the state of the tide at any hour of the day or night. The present machine, after being set, is worked by turning a handle; the new machine will be run by clock-work. One of the principal reasons for wanting a new machine is found in the extremely delicate construction of the present mechanism, which allows a slight error of torsion in the shafts to creep into the final result.

The new machine has been building for some years and will hardly be completed for several years more, inasmuch as the force of instrument-makers can only work on it when other demands on their time cease. The regular work of manufacturing and repairing surveying instruments must go on, and the tidal machine must take its chance, getting worked upon in the interims. It is interesting to note that E. G. Fischer, now the chief of the Instrument Division, worked on the original machine. Scarcely less credit must be given the builder of so complicated and intricate a mechanism than to the master mind which invented it, as upon the accuracy and faithfulness of the workmanship depends the accuracy of the predictions, upon the accuracy of which, in turn, depends human life and property. The improvements on the new machine are largely, if not wholly, due to Mr. Fischer's inventive genius.

Germany Pays \$3,400 for Nineteen of Our Chickens.

A NEW price record for fancy poultry has just been established in America, if not in the world, by a New York State fancier. He sold the other-day a flock of nineteen birds—three cocks and sixteen hens—for export to Berlin, Germany, for an aggregate of \$3,400. They were all of the rose-combed Black Minorca breed.

The leader of the flock is the cock Victor, a first-premium winner in several exhibitions, which sold for \$1,000. That the purchaser saw in this individual superlative merits is evinced by the fact that the highest previous price ever paid for a single fowl in America was \$300. Second only to Victor is his brother, Headlight III., winner of seconds to his brother at these exhibitions. For him was obtained \$500. Then came the cock Captain, a first winner as a cockerel, for \$200. The sixteen remaining members of the flock, all females and all winners at the various shows, were lumped in together for \$1,700.

The Black Minorca deservedly holds a high reputation among poultry fanciers as being a prolific layer and profitable bird for the table. In 1887 the owner was led to experiment in the direction of the rose-combed Black Minorca in an attempt to reduce the Black Minorca as nearly as possible to no comb at all. This breed was distinguished by its large comb, which was considered by many as a defect because of its greater susceptibility to freezing weather. The owner started with his own imported strain of Black Minorcas, and the process was a very tedious one. The first start was with a cockerel which was hatched from one of the breeding pens that he imported. He had two side splits on his comb. Only a small percentage of the first generation of his progeny showed the same defect, even in this slight degree. In 1889 the experimenter succeeded in getting but one hen which showed a satisfactory reduction in her comb, and from this individual has been produced the present rose-combed Minorcas.

American City Rises Out of Its Ruins.

NEWs from Galveston, the American city on the Gulf of Mexico that, a little less than four years ago, was to all intents and purposes wiped off the map of the United States, tells us of the completion of a great new sea wall and of preparations to grade the city itself up to the level of safety established on the Gulf side. In three years more, we are told, the city will have been raised above the possibility of a recurrence of the disaster caused by the great tidal wave of September, 1900.

When Galveston shall have been elevated to a position of security from floods the city, which already has won for itself a remarkable reputation for its energy in recovering from disaster and for the commercial pace it has set, will indeed be a place unique. Sea walls have been built in other places and dikes have been strengthened from time to time, but the raising, practically, of a whole city far above high-water mark has no place heretofore in the expression of human enterprise and determination.

There was talk of abandoning the Galveston site for one brief moment of dejection after the disaster of 1900; but despair was succeeded by determination and with the reaction came a veritable boom. One year ago, three years after its apparent desolation, this city of barely 40,000 souls was marked as ranking third among the export ports of the country and eighteenth on the list of ports of entry. Fifty-three steamship lines contribute to a trade which had in September last doubled itself in a year. From these facts it will be seen that the elevation of Galveston is worth while even for more substantial purposes than that of presenting an unrivaled example of municipal pluck.

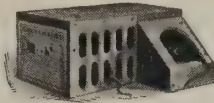
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4 sizes.
For catching small fur-
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Coxes'
Self-Setting Wood
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1, 2 and 3 Hole, Square.
4, 5 and 6 Hole, Round.



Coxes'
5-Hole Metal Mouse Trap.
Extra heavy.
Well made.



Pennsylvania
Rat Trap.



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Over three hundred and fifty thousand (350,000) in use throughout the civilized world.

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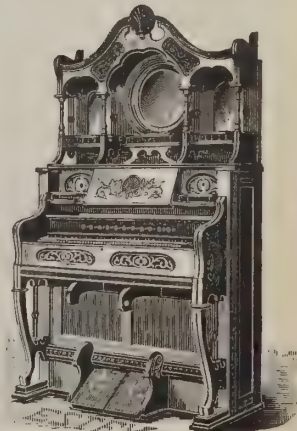
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NOTE.—To facilitate the handling of our export trade we desire to communicate with one responsible musical instrument dealer in each trade center of the world.



ESTEY PIANO. Style 20.

Made in mahogany, oak and American walnut. $7\frac{1}{2}$ octaves, scale A to C. Height, 4 feet 3 inches; Length, 5 feet; Depth, 2 feet 3 inches; Weight, boxed, 360 pounds.



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Solid walnut or oak case. Height, 6 feet 8 inches; Breadth, 3 feet 10 inches; Depth, 1 foot 11 inches; Weight, boxed, 400 pounds.

HAVE YOU SEEN THE

**Schroeder
Rotary
Washer?**



It is the most perfect and successful Rotary Washer on the market. The tub is made of red Louisiana cypress, which will not fall apart. All castings are finished with rust-proof aluminum paint; all iron parts coming in contact with the clothes are heavily galvanized. We also make other washers. For particulars address

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TOBACCO-CUTTING MACHINERY

For making Fine Cut, Smoking, Cigarette and Picadura Tobaccos.

HIGH STANDARD BRASS GOODS

For Engine Builders, Gas and Steam Fitters.

WRITE FOR CATALOGUE.

AMERICAN HOISTING ENGINES.

Excellent Work Done by Our Machines in Foreign Lands and on Ocean Vessels.

NOTHING, perhaps, has done more for the reputation of American machinery abroad than the excellent, and, in many instances, remarkable, work achieved by the hoisting engines built in the United States, and which have come to be regarded as standard by engineers in foreign lands as well as on the great vessels that traverse the waters of the Eastern and Western hemispheres. These reliable, hard-working little machines, each bearing the nameplate of its American maker, are found not only in the mines of Alaska, in the cypress swamps of Florida and Louisiana and in the giant forests of Canada and the Northwest, in our own country, but also on whaling vessels in the Arctic seas, in the diamond fields of South Africa, in the gold diggings of far-off Australia and on the wharves and docks of the world at large.

It would be hard to find anything that conveys the idea of hard, practical, hustling work so emphatically as does the hoisting engine. While one is thumping piles into the mud of the river bed you will find another near at hand operating the scoop or bucket of a steam shovel or dredge. Hoisting engines are indispensable in quarrying, mining, loading and unloading vessels, digging sewer ditches and canals, building bridges and tall buildings and for a hundred other purposes. No steamship is complete without one or more of them, and on sailing vessels they are used for hoisting sail, warping the vessels to their berths at wharves or in docks, raising the anchors, and for loading and discharging cargoes.

And yet the hoisting engine is of comparatively modern origin. The business of manufacturing them in this country was begun about 1845, when they were generally spoken of as donkey engines, probably because they took the place of mules and horses in the work of pulley-hauling.

No city in America is more closely identified with the progress of the hoisting engine than is Newark, where there is a tradition that the first and second engine of this type, then called a winch engine, was made in this city as early as 1826 or 1827, but there is not sufficient evidence to back the story up. It was not until 1845 that any machinist in this country devoted his whole attention to making hoisting engines.

In that year the Lidgerwood Manufacturing Company was founded. If the plans of this company are carried out the American city of Newark, N. J., will produce at least 90 per cent. of all of the hoisting engines in the world. At present that city is doing pretty well toward this end. The Lidgerwood Company is probably the largest manufacturer in the world at present, with the Lambert Hoisting Engine Company second, and J. S. Mundy a close third.

In one of these great factories are manufactured not only hoisting engines of over fifty types, but fixed and portable derricks, coal towers, loading and unloading machinery, mine engines, sheaves, buckets, pulleys, piledriving hammers, winch shafts, dedging machinery and all kinds of fixtures used in hoisting work. A specialty of this concern is electrically driven hoisting engines with motor and controllers upon the frames.

One peculiarity of a hoisting engine is that it looks cheap and yet costs more per pound than the most improved type of Corliss or other stationary engine. You can buy hoisting engines rated from five horse-power up to 250 horse-power, and the latter will cost you more than a handsomely finished, high-speed or compound engine of the same capacity. Hoisting engines are not made for show. Strength, utility and endurance are the features sought for, and, above all, simplicity is demanded. The common, or standard, type of hoisting engine used upon bridge work, steel construction, sewer work or quarrying, seldom has a roof over it. There is no demand for polished steel, or fancy fittings upon an engine which is designed to do dirty work in storm or sunshine. All the contractor wants is an engine that will stand up to its work and will not require an engineer to know any more than to run it and obey signals.

One of the great advantages of the hoisting engine is that it can get about with very little help. It is self-propelling, with or without wheels. At the engineer has to do is find something to snub a rope to and he can yank his engine along on skids. If he has the right kind of an engine for bridge construction, with a number of drums or winches upon it, he can start his engine and elevate it with ropes and ride up with it, stopping in mid-air if he chooses. Of course, he has to have something above to tie the cables to. When the bridge over the Hudson River at Poughkeepsie, U. S. A., was being constructed, a hoisting engine was sent up the Hudson River on a boat. It was stopped under the bridge and ropes let down from the structure and passed around the winches. The engineer and four men stood upon the engine bed, and when the power was turned on the engine raised itself to the point on a pier where it was needed. This needed clever manipulation, as the engine had to be not only hoisted by its own power, but warped over to its bed after reaching the desired point.

In the Canadian woods wonderful logging boats called "alligators" are used. They contain a hoisting engine and a portable sawmill. The owners plunge through forests from lake to lake with these strange craft, and the locomotion is all done with the hoisting machine. The boat is drawn out of water by means of cables attached to trees or stumps, and a way is opened for it by axmen. It puffs and wheezes as its heavily planked bottom is drawn over stumps, up hills, through swamps and slanks to the destination selected by the owner.

The furnace is fed with wood from the deadfalls and with sawdust and slabwood after the mill gets to work. Most of the "alligators" are put down as pirate craft, and are held in terror by the dwellers of the woods. It is said that a few years ago a man with a hoisting engine in his boat made a record of five and one-half miles in a day through a trackless pine forest between two lakes.

Mechanical Devices That Seem to Have Brains.

A WRITER in a recent issue of the *Washington Star* relates some interesting observations regarding the progress made by American ingenuity:

"From the corn-miller's little bell that sets up a fussy tinkling the moment the hopper runs empty, up to the calculating machines that are now to be found in banks and insurance offices, clearing-houses and observatories, there are so many mechanical substitutes for brain-workers that it is difficult at times to realize that it is, after all, only mechanism and not intelligence that is being evolved," said an employee at the patent office to the writer. "Some of the touches of what, for convenience, we may call mechanical intelligence to be met with in various odd corners of the industrial and commercial world are really quite amusing, and they have their prototype in that little bell of the old windmill.

"There is, for instance, to be seen in any screw factory, a different application of that device. The machinery takes hold of a rod of metal, pulls it rapidly along, gives the end of it the general shape of a screw, cuts the thread round it and the slot in the head, and then ships off a perfect screw. If you watch the thing actually making the screws the idea strikes you that it is really a piece of mechanism; but when the machine comes to the end of its material and gives a sharp, impatient ring of the bell for the attendant to bring more, you cannot help laughing and you would scarcely be surprised if, when the man came with another rod, the busy screwmaker gave him a sharp reprimand for inattention and dilatoriness. In these days of phonographs, of course, it would be quite practical to make it do so.

"The machine by which railroad tickets are printed gives another amusing little show of intelligence or what looks to be very like it. Railway tickets are not, as might be supposed, printed in large sheets and afterward cut up. The cardboard is cut into tickets first and they are printed one by one afterward. The little blank cards are put in a pile in a kind of perpendicular spout, and the machine slips a bit of metal underneath the bottom of the spout and pushes out the lowest ticket in the pile to be printed and consecutively numbered. It is of no use to print a bad ticket. The machine finds out an imperfect blank in an instant, and flatly refuses to have anything to do with it.

"These are simple instances of a good imitation of watchfulness and discrimination; indeed, the latter looks almost like conscientious care. They afford a droll suggestion of the trained intelligence of the learned pig or the performing dog; and we find many various degrees of the same. At the United States mint they have weighing machines for coins to which it is difficult to deny a very acute intelligence. The mint apparatus is the more remarkable of the two.

"The new coins at the mint, however, are sometimes a trifle over weight, while sometimes, of course, they are under, so it is necessary to sort them out in three categories—light, heavy and good. This delicate business is done with unerring precision by a long row of wonderfully clever machines. Into these machines single piles of shining new coins are put, and quite automatically the mechanism takes each coin, puts it into the scale and in a fraction over two seconds—at the rate of twenty-five a minute—weighs it. If the coin is light the machine shoots it into its proper receptacle; if heavy, into another, and if it is of correct weight, or with a margin as they call it, it is pushed into a third receptacle."

Excavates Seven Cubic Yards a Minute.

THE problem of satisfactorily and economically digging out submerged solid rock has been successfully mastered by an American company which is now engaged in the task of digging a canal or inland harbor at Buffalo, U. S. A.

This canal is to be 200 feet wide and 23 feet deep; that is, its bottom is to be twenty-three feet below the level of the lake, so that in places the excavation is to be forty feet in depth. When the surveys were made it was found that a strip of rock nearly a mile in length, 200 feet wide and ten feet in height must be cut out. The ledge or strip is not shale slate but solid living rock.

The construction company is overcoming this formidable obstacle by the employment of a steam dredge which probably is the biggest tool of its kind in the world. Its anchors, or spuds, are of giant Oregon fir, fifty-three feet long and forty-four inches through. It has a dipper with a capacity of seven cubic yards. One man with a dozen levers before him operates the machine.

The dipper is armed with steel teeth about fifteen inches long and six inches thick. The man at the levers drops the dipper fifteen feet to the rock bottom. Then he moves another lever and the big engine down in the hold gets under way. There is a ripping and tearing and grinding and up comes the dipper with its maw chocked with masses of splintered rock. It can dig up seven yards a minute.



Griffin Cleaner and Paste Combination

for Cleaning and Polishing Russet and Russia Leather Shoes and all Articles made of Russet and Russia Leather.

NOTE—Our Cleaner contains no Camphor.

Our Cleaner and Paste Combination for cleaning and polishing Russet and Russia Leather Shoes (and all articles made of Russet and Russia Leather) cannot be surpassed, if used according to directions.

The Cleaner cleans and removes stains, and the paste produces a brilliant, durable waterproof polish, which is not sticky or gummy. We also make it in different colors, ox blood and brown.

Price per gross, large size.....\$14.00
Price per gross, small size..... 7.50

Discount, 10 per cent.

Griffin Russet Leather Polishing Paste.



Our Russet Leather Paste for producing a high gloss on Russet and Brown Leather Shoes (and all articles made of Russet or Brown Leather) cannot be surpassed, if used according to directions. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and yet is not a varnish.

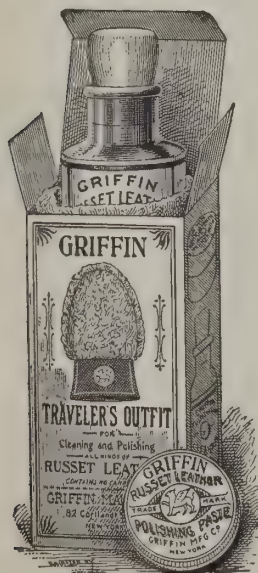
Excellent for vici kid.

We guarantee it not to injure the leather in the slightest degree, as it is free from acids, and will not soil the finest of fabrics.

If the shoe is dirty it should first be cleaned with Griffin Russet Leather Cleaner.

Price per gross, large size.....\$6.00
Price per gross, small size..... 3.50

Discount, 10 per cent.



Griffin Russet Traveler's Outfit.

An excellent thing to take along when traveling.

Contains a bottle of cleaner for cleaning and removing stains. A box of our polishing paste and a polishing mitten.

Price per gross.....\$18.00
Discount, 10 per cent.

Our Parisian Dressing.

A Black Dressing for Ladies' Shoes. Is considered by good judges to be the best and nicest put-up 10-cent dressing on the market.



We guarantee it not to contain anything injurious to the leather. It contains oil which helps to keep the leather soft and pliable. Packed in one and three dozen boxes.

Price, per gross, \$8.00.
Discount, 10 per cent.

Griffin Sterling Combination

Our Sterling Combination for dressing and producing a gloss on shoes made of Box-Calf, Cordovan, Vici Kid, French Enamel and all fine dry black leathers. Cannot be surpassed if used according to directions. It is easily applied, polishes quickly and easily; its lustre is brilliant, durable and not sticky or gummy and will not crack or scale off. It keeps the finest of leather soft. We guarantee it not to injure the leather in the slightest degree, as it contains no acid or other injurious substances.

A circular in each package giving full directions.



Price per gross, large size.....\$15.00
Price per gross, small size..... 8.00

Discount, 10 per cent.

Griffin Patent Leather Polishing Paste.



Our Patent Leather Paste for restoring the gloss to all articles made of Patent and Enamel Kid Leather cannot be surpassed. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and is not a varnish, as it leaves no coating.

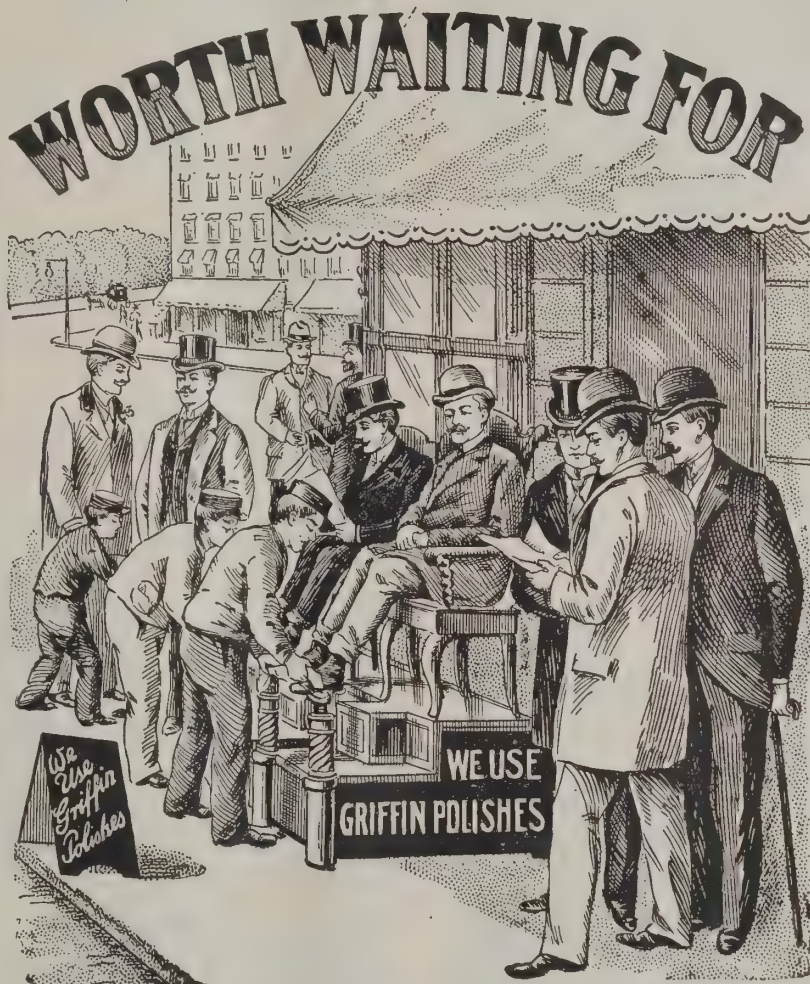
We guarantee it not to injure the leather, as it is free from acids.

It is invaluable for brightening the saddle and blinders of harness, as the polish is waterproof.

Just the thing for manufacturers of harness to use, as it will prevent the Patent Leather parts from becoming dull.

Price per gross, large size.....\$6.00
Price per gross, small size..... 3.50

Discount, 10 per cent.



GRIFFIN SNOW WHITE.



For cleaning and re-whitening white shoes made of canvas, suede and buckskin.

Price, per gross, \$10.00.
Discount, 10 per cent.

NONE BETTER MADE AT ANY PRICE.

Send us a trial order through any commission house in New York; above prices f. o. b. N. Y.

GRIFFIN

High-Grade Shoe Polishes.

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Griffin Sterling Traveler's Outfit.

For Box-Calf, Vici Kid, French Enamel and all dry Black Leathers.

Put up in a carton. Contains a bottle of Sterling Dressing, a box of Polishing Paste and polishing mitten. Also suitable for Enamel and Patent Leather.

Price per gross.....\$18.00
Discount, 10 per cent.

VAST PIPE LINES PLANNED.

Colossal Improvements Costing \$200,000,000 That Will Make Standard Oil Independent of Railroads.

IN order that it may meet altered conditions that have arisen in the last few years in the production of crude oil in the United States, the Standard Oil Company, according to a recent article in *Popular Mechanics*, has determined upon and even commenced work on vast improvements in its facilities, the cost of which is estimated at probably \$200,000,000. The colossal plant of the company at Whiting, Ind., the largest oil refinery in the world, is soon to be made of threefold more importance by a great scheme for developing the new Southern and Western oil fields.

The Whiting plant is to be made the radiating point of the oil industry in America. From it pipe lines are to extend in all directions, tapping every oil region in the country. Handling the entire crude oil production of the East, West and South, through underground pipe lines, instead of railroad tank cars, is contemplated in the great development plan. Streams of oil flowing underground through connected pipe lines extending all the way from Port Arthur, Tex., through the oil regions of Oklahoma, Kansas, Indiana, Ohio and the East, to New York City, a distance of more than 2,500 miles, will be the result when the scheme materializes.

From this great "trunk pipe line" branches will extend to all the Standard Oil refineries. This system of underground oil transportation will make the Standard Oil Company entirely independent of the railroads for handling crude oil and will save the company millions of dollars annually in freight expenses. The Whiting plant is practically to become the central plant of a mammoth pumping system that will have streams of oil speeding underground across the continent, from the Gulf of Mexico to New York City.

At present an eight-inch pipe line, reaching to the refinery from Lima, O., 200 miles and fed by wells of the Ohio and Indiana fields, furnishes the crude oil supply of the Whiting plant. There are pumping stations fifty miles apart all along this pipe line, and at each station there are about ten men employed. The cost of transporting the oil through this pipe line is about one-tenth of what it would be if shipped by rail. The line pumps into Whiting each day an amount of oil averaging 300 cars, which is the present capacity of the plant. This capacity is to be greatly increased when the proposed improvements are made and when the great interstate pipe-line system is in operation.

Since 1902 the United States has led the world in the production of petroleum, and the output is still increasing by the constant opening up of new fields. Russia, the nearest competitor to the United States, in its last report shows a decline. In 1902 the United States produced 48 per cent. of the entire petroleum output of the world, and doubtless these figures will be added to when the report for 1903 is issued. The United States produced in 1902 8,266,862 barrels more than Russia and 19,377,722 barrels more than the preceding year's production of the United States. Russia's production showed a decline of 4,628,512 from the preceding year.

For this increase the United States is indebted to the western and southern sections of the country. But for them the output would have fallen far below that of Russia, and, in fact, would have shown a decrease, compared with the production of 1901. All the old Eastern oil fields which have heretofore been the principal source of the Rockefeller millions and of the big American oil production show a falling off, while in the new fields the production has increased enormously.

This would indicate that the United States is destined to supply the world with oil, and that oil must come from the West and the South.

The eastern United States fields and the Russian fields are falling off and the western and southern United States fields are increasing in enormous proportions. Besides this, new Western and Southern fields are being constantly discovered. Alaska is regarded as an important field for prospecting at present.

The Standard Oil Company, therefore, has recognized the coming great importance of the new oil fields as the future source of supply, and has taken steps toward their development to a high degree. For this purpose the vast improvements are to be made at a cost of probably \$200,000,000. The immediate improvements, besides the numerous pipe-line constructions, include the erection of a big refinery at Kansas City, the employment of a fleet of oil steamers on the Great Lakes (which in part separate Canada and the United States) and the construction of ports specially for the docking of the oil steamers. Five of these oil steamers are already built and will be placed in commission this season.

3,450 Miles by Auto—Wonderful Fifteen Days' Run.

AN interesting account was given in a recent issue of the *New York Times* of a remarkable automobile run half-way across the American continent, made by Mr. F. A. La Roche from New York to St. Louis and return, a distance of 3,450 miles, without stopping his engine. A huge, twenty-horse-power touring car was used to accomplish the feat, which has no parallel in motoring history. The trip occupied fifteen days and two hours of continuous running.

In the course of the double journey many interesting and diverting occurrences were experienced by the tourists—there were four of them—and a few hair-breadth escapes were thrown in for good measure.

Another remarkable test of speed and endurance was made last month, when the world's record in continuous automobile speed and endurance for

1,000 miles was broken by Charles Schmidt, on the Grosse Pointe, Mich., U. S. A., mile track. Mr. Schmidt drove an American-made car, 1,000 miles without stopping the motor in 29 hours 53 minutes 37 3-5 seconds, averaging 33½ miles per hour for the entire distance. The car was started at 6.16 P. M., Saturday, August 6th, and the 1,000 miles were completed at 9 minutes 37 3-5 seconds after Sunday, midnight. The motor was never stopped, and the only stop of the car itself was on account of tires.

The first 500 miles were made without stopping either the car or motor in 15 hours 5 minutes, averaging 33 miles per hour throughout the entire night. The fastest mile was made in 1 minute 25 3-5 seconds, which is at the rate of 42 miles an hour.

New Uses Discovered for Old Paper.

SOME of the most important American industries in the chemical line have been founded upon the utilization of what was previously thought to be waste matter, as has been told at some detail in previous issues of *THE AMERICAN EXPORTER*. An additional chapter on the subject is worth reading.

"New uses for old paper are being found almost daily by the different trades and by people who have a little ingenious turn of mind," said a New York junk dealer recently. "You don't see much waste paper thrown away nowadays, and when you consider the great amount that is daily accumulating it seems remarkable. The newspapers are reeling off tons of paper every day. All this great quantity of paper must be destroyed or used. There are eager scavengers of the city after every stray paper and bundle of wrapping paper. If it were not so the Street Cleaning Department would have to organize a special corps of men just to collect newspapers and burn them.

"Most of the newspapers are gathered up and converted into marketable paper again, and some go in with the rags to make various kinds of commercial material; but outside of these two lines of industry the paper is made into different useful articles of a wonderful nature. The newspapers are made of the spruce pulp, and by a steaming process they can be reconverted into a smaller pulp again. This pulp is not so good as in the first instance, and no one has yet found a way to make it possible to use it over again for newspaper work. However, it is chewed and steamed up and is then used for many other purposes. Wood-pulp novelties, lead-pencil-holders, paper-weights and ash-receivers are manufactured from this waste paper.

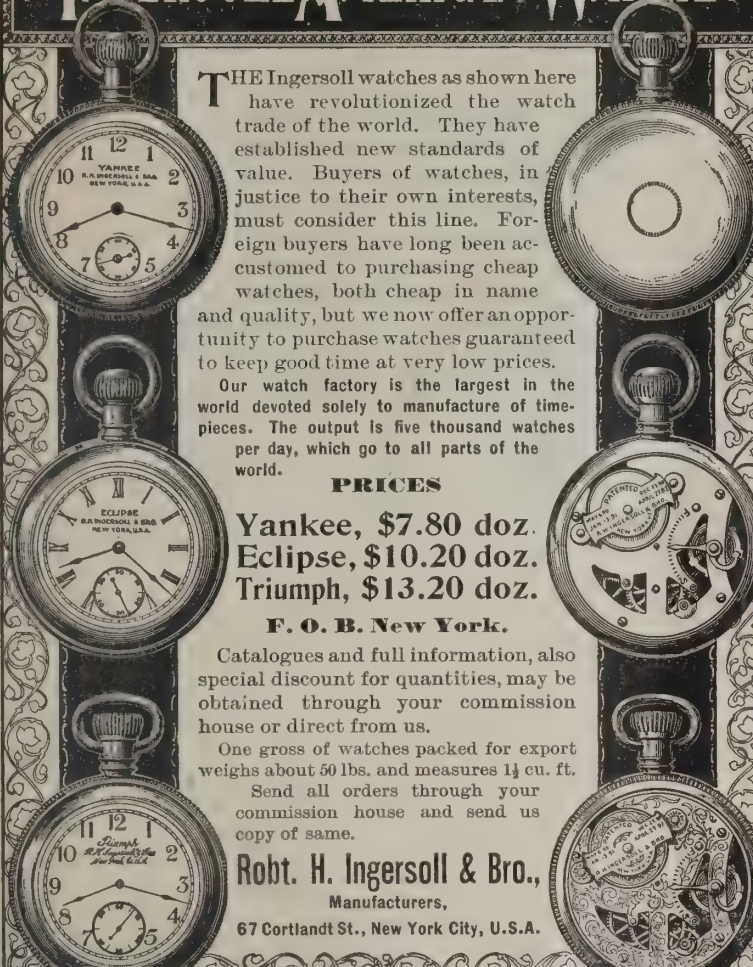
"Of course, there are experimental workers in waste paper, and some of them are working on problems which appear very easy of solution, but which in reality are most difficult. For instance, what seems easier than to use the paper over again for printing? Why not boil and steam your waste paper and roll it through machinery into new sheets for the daily presses? Nothing appears at first sight easier, but there is nothing that seems to give back to the paper the life which the process of printing takes from it. It is dead paper. It lacks vitality, strength, finish, and it is mixed with inks and chemicals. If any man can rejuvenate the paper and make it fit for the presses over and over again he will make a fortune and revolutionize the printing business. What a boon it would be to a newspaper to run its waste paper back again and buy in old copies of the early editions for use in the Sunday edition! Yet I firmly believe that some day we will come to that. Then the price of newspapers will go down. No paper company can control the market of spruce trees to force up the price of cheap-grade paper. It will be a benefit to the publishers and the reading public as well. To-day papers are printed and sold at a penny a copy simply because paper-making has cheapened the process to such a wonderful extent, but we have not yet reached the limits. There are more improvements ahead which the present generation has far from anticipated."

Mechanical Refrigeration on American Railways.

THE American scientific engineer has achieved one more victory over natural ice, and now has constructed a refrigerating machine for freight-cars, which forms an integral part of the car, and does away entirely with the necessity of constantly refilling the refrigerating-chamber with ice during its journey. This new device, which has recently undergone successful tests, consists of a small refrigerating-machine for each car, located in an enclosed casing beneath the car, and deriving power by gearing connected with the axle of one of the trucks. The machine includes a compressor for condensing the gas, usually carbon dioxide, circulating pipes which cool the car, and a condenser for abstracting the heat from the condensed gas. The principle underlying is that common to most systems of mechanical refrigeration, and is based on the fact that a gas expanding extracts heat from the vicinity, while a gas being compressed absorbs heat. The function of the condenser is to withdraw the heat from the gas that has been compressed, and for this purpose water is employed, which in case of need can be supplied from engine hydrants, while rain-water from the roof of the car is also employed.—*Harper's Weekly*.

Framed Pictures and Moldings.—Great advances have been made in America in the manufacturing of frames for pictures, mirrors, molding and in the industry of furnishing framed pictures to the trade abroad and at home. One of our American firms has been very successful in this direction and readers of *THE AMERICAN EXPORTER* who are interested will do well to send for a copy of the handsomely illustrated catalogue No. 105, which is issued by Nathan H. Hirshberg & Son, 215 and 217 West Pratt street, Baltimore, U. S. A. The catalogue is something that must be seen to be appreciated.

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THE Ingersoll watches as shown here have revolutionized the watch trade of the world. They have established new standards of value. Buyers of watches, in justice to their own interests, must consider this line. Foreign buyers have long been accustomed to purchasing cheap watches, both cheap in name and quality, but we now offer an opportunity to purchase watches guaranteed to keep good time at very low prices. Our watch factory is the largest in the world devoted solely to manufacture of time-pieces. The output is five thousand watches per day, which go to all parts of the world.

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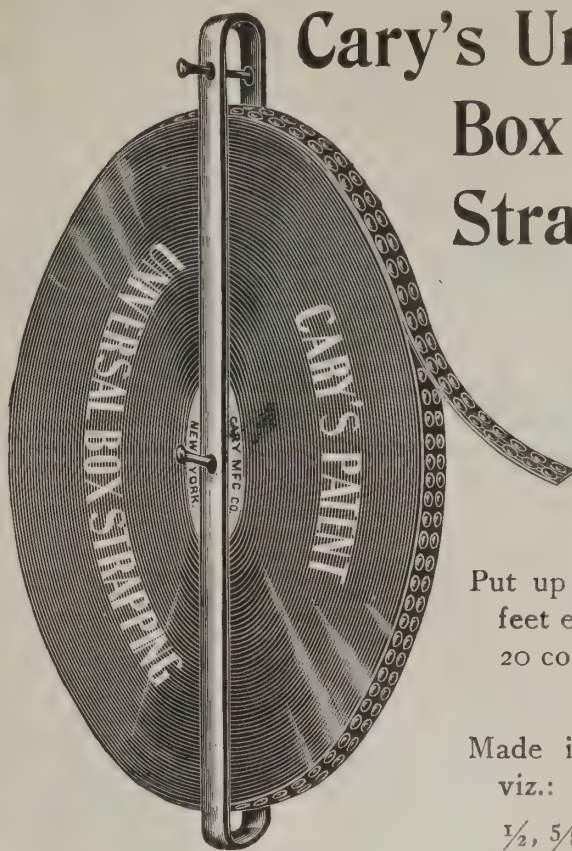
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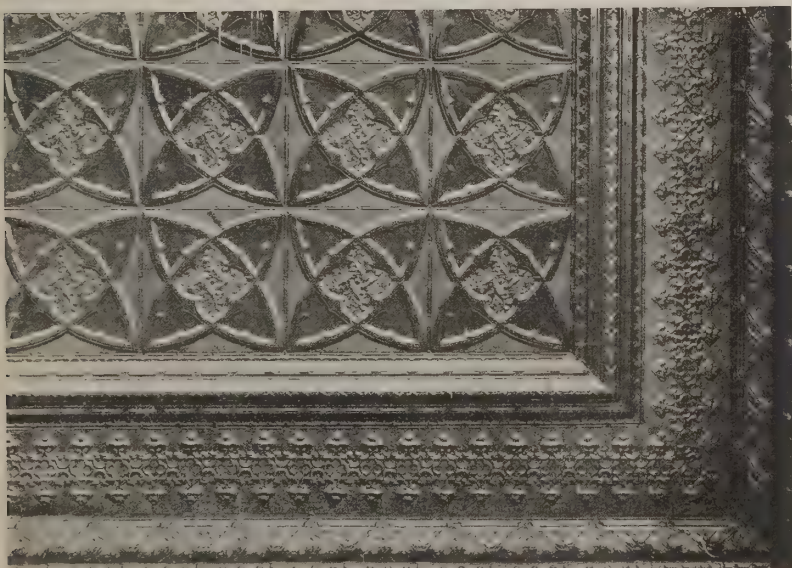
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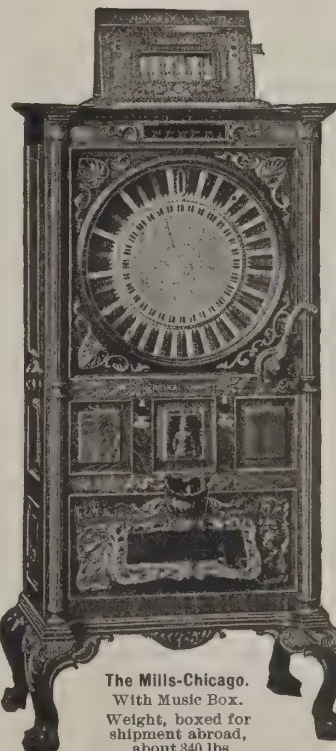
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BUSINESS AS AN EXACT SCIENCE.

The American Expert Reduces the Multiform Processes of Great Industries to a Perfect System.

ONE of the most notable features of the march of American prosperity in recent years and a feature that is as much a cause as a result of that prosperity is the modern idea of applying scientific principles to the conduct of our industries. Modern business has changed in most industries and is very rapidly changing in others from the old order of slipshod, rule of thumb activity to a comparatively exact science and a study of the subject reveals the fact that greater efficiency of the modern business man is due—if not altogether, in great part—to the intelligently applied scientific methods of the expert who not inaptly has been termed a "business engineer."

Business experts are of many kinds, from the man who has a new wrinkle in simplifying the bookkeeping or some new appliance for filing records so as to save clerk hire, to the production engineer who reorganizes the departments, factory processes and the whole accounting system of an industry forming of the three a compact efficient whole. The most interesting and important part of an expert's work, however, is in devising systems and methods of ascertaining the actual cost of production. What the manufacturer of the present day desires to know and is willing to pay for liberally is a system that will tell him the actual cost of each article he makes, not at the end of a year, but while it is in the process of making. Such knowledge is of incalculable help in reducing expenses to a minimum and it also does away with blind competition that ruined many a business man in the old days, for it supplies an accurate basis for fixing selling prices that are fair to manufacturer and purchaser alike.

As an instance may be cited the case of one of the largest manufacturers of agricultural implements in the country. After many years of business prosperity he found increasing competition so keen that his profits disappeared. He called in an expert.

"I manufacture," he said, "thirteen different classes of articles, such as plows, harrows, cultivators and so on. My price-list shows more than 3,000 finished parts and complete machines. Now, I want to know just how much each article costs me to make and just what my profits or losses are every month in each class in each different territory where I sell my goods."

The expert spent two weeks examining the plant and inspecting the processes of the work. Then he devised and installed a system of collecting, just as they actually occurred, all the items of cost on each article.

The expense was nearly \$10,000 a year for the cost accounting department, but the accurate knowledge acquired put the business on a profitable basis.

The installation of a system demands tact, patience and personal enthusiasm. Employees are frequently averse to changing the methods; and to make any system go needs the active cooperation of all. Continual objections have to be answered and a repetition of explanations made *ad nauseam*.

"I don't like this system at all," said a young woman in an accounting department.

"Why?" asked the expert.

"Because you have to be so awfully accurate," was the reply.

The keeping of stock-rooms and a stock account makes a monthly balance possible without taking an inventory. Moreover, it affords an easy, almost automatic way of always keeping the proper amount of stock on hand without overstocking. The manager fixes a minimum below which any kind of stock shall not go and a maximum over which it shall not go. The stock-clerk is directed, whenever the balance of the stock-book shows that the minimum is approached, to order enough to bring the amount on hand up to the maximum.

An increase in any business always involves a necessity for more complex organization and for subdivisions of responsibilities. The duty of attending to details must be intrusted to subordinates. Less and less as American industries grow can the executive heads keep in touch with the daily course of the work. But a cost system properly handled gives them a way of closely watching even the smallest details.

Some of the most remarkable achievements of "business engineers" have been in gathering and systematizing data for fixing the price of piece-work. The great difficulty with this theoretically ideal plan of remuneration has been a lack of accurate information on which to base a satisfactory standard. The price generally has been set by estimates of the time it should take a workman to do the work. If some men increased their output largely the employer almost invariably cut down the price, feeling that the estimate for time required had been too high. This has happened so often that labor unions are usually opposed to the system and often put a limit on the amount any man may turn out.

A certain expert, in reorganizing the business methods of a steel plant, had the workmen in one department timed on absolutely every step of their work. Even the time taken to lift a piece of iron from the floor and place it on the planing table was kept. For a year and a half these data were collected on all kinds of iron and under different rates, and then a final system of payment was fixed, based on the average. The management were certain that they knew the exact time in which a good man could do the work, and if any employee could shorten it he was welcome to the extra pay. Consequently there was no restraint on effort. A year's trial showed an increase over the production under the daily wage system of 7 per cent. and an increase in wages of 18 per cent.

It is easy for men accustomed to doing work in certain ways to overlook their disadvantages. It often requires some extra bracing up to induce a manufacturer to expend large sums for new devices and appliances for saving time and labor. The expert often gives just this necessary stimulus. From wide experience and observation he knows about nearly all inventions and mechanical devices. In a certain wholesale hardware house the goods to fill orders were assembled in the stock-room, carried on trucks to an elevator and then down to the shipping-room. An expert spent half a day, watch in hand, keeping the number of minutes the employees wasted waiting for the elevator. "You lose too much time there," he said to the owner. He devised a slanting chute from the stock-room to the shipping-room, and turned a section of the floor into a moving platform leading directly into the chute. A bundle dropped anywhere on the platform was carried to the chute and the force of gravity did the rest.

Even minute odd details receive attention. A small country manufacturer, for example, complained that his local competitors followed his shipments to the freight depot and stole the names of his customers. He did not want to ship the goods to his own order. The expert drew up a tag in the shape of an envelope, having inside the name of the customer and his address. Outside was a notice to the freight agent at the town of destination to open the tag as soon as the goods arrived.

Experts solve large problems by just this science of the minute and the mastery of details. They have blazed out the way for a new profession, the principles of which can be taught. Most of them have many young men under them whom they are training. One company gives each man who enters its employ a month's instruction by lectures before he goes out with trained men to see and help in actual work.

The Massachusetts Institute of Technology includes in its curriculum a course in industrial management. Young men can now fit themselves for business in the same way that a man fits himself for law or for medicine. Modern American business has, indeed, become a science.

Traveling Machine Shop's Advantages.

A PROPERLY equipped portable machine shop is one of the most recent additions to their facilities of one of the large American construction companies. They had often experienced much inconvenience in the erection of rolling mill and other large plants from the necessity of having on the spot several machine tools with some means of operation on which to do the small jobs of fitting, etc., which cause so much delay if the various parts have to be sent to a machine shop.

The expense of installing tools and the depreciation on account of exposure was excessive, and the machine-shop car has proved to be a great success. It is sent to a plant whenever the erection is to begin and remains there on a siding ready for immediate use until the work has been finished, when it is despatched to the next field of operations.

The car itself is an 80,000-pound capacity box car, with standard inside dimensions of 8 feet 6 inches by 36 feet. The motive power is obtained from an eight-horse-power gasoline engine. The danger of using a gasoline engine in such a small place where a forge and combustible material would often be used was overcome by bolting the gasoline supply tank underneath the car. For cooling the engine cylinder, a 300-gallon water tank was placed inside the car.

The car is equipped with a 20-inch lathe, an 18-inch stroke Stockbridge shaper, an emery wheel grinder, a forge, anvil, good-sized work bench, and all the necessary auxiliary tools for these machines.

The car may be lighted by electricity or gas. Acetylene and steam pipes for heating purposes are run along the side of the car.

It has been found of much practical value in field work, saving the superintendent of erection much time, trouble and traveling when machine work is required without delay.

Big Feat in Boring Tunnels for a Canal.

ONE of the most remarkable feats of American engineering enterprise is an irrigation canal which will pass through three tunnels. The longest of these, 1,400 feet in length, is now being bored in Nevada.

The rocky character of the greater part of the country to be traversed necessitated the employment of tunnels. The canal will be 23 feet wide at the bottom, 53 feet at the top, and 15 feet deep and will receive 1,400 cubic feet of fresh mountain water per second.

About 2,000 men are employed in this work, which will cost the Government nearly \$1,000,000, although the length of the canal is only thirty-two miles. It will open vast areas, hitherto arid and waste, to the homesteader and to agriculture, and will greatly promote industries in contiguous tracts.

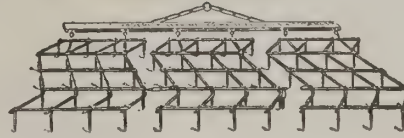
Tool Machinery.—Our tool machinery has been making rapid progress abroad. Consul Langer, at Solingen, Germany, mentions as a straw the following: "The imports from the United States have more than doubled during the first three months of 1904, being 578 tons, against 269 tons in 1903; appearances tend toward a still higher increase. This seems to be the chief reason for the continued agitation of German tool machine factories for higher rates of duty."

The top image shows a standard 8x8 chessboard with alternating light and dark squares. The board is set within a decorative, irregular frame. The bottom image shows a perspective view of a large, ornate board, likely a backgammon board. It features a central square area with a diamond pattern, surrounded by a wide border with a grid of squares. The board is set within a decorative, irregular frame.

[illegible]

Our illustrated catalogue, printed in colors, showing the various styles of Game Boards made by us, mailed postpaid. We will also forward, postpaid, our catalogue, illustrating and describing our many styles of COMBINATION LIBRARY, DINING, BILLIARD and POOL TABLES. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us a duplicate of order.

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UNITED STATES WASHING MACHINE CO.
RACINE, WISCONSIN, U. S. A.

SMOOTH-ON

An illustration of a roll of 'SMOOTH-ON' paper. The roll is shown partially unrolled, revealing a repeating diamond-shaped pattern. Each diamond contains the text 'MADE IN AUSTRIA' and 'SMOOTH-ON'. The paper has a textured, slightly mottled appearance. The roll is positioned on the left side of the image, with the unrolled portion extending towards the right.

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No. A 20. 50 inches long; 30 inches wide; 48 inches high; weight, 230 pounds.
No. A 21. 55 inches long; 30 inches wide; 48 inches high; weight, 250 pounds.
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A MODERN, neat and practical desk. Quarter-sawed white oak front. Drawers have moulded fronts, carved wood pulls. Center drawer with flat keyed lock. 14 pigeonhole boxes with quartered oak fronts and bronze label holder pulls. Closed paneled back.

Arrangement.—Letter file in right-hand pedestal with index and compressing device. Card index drawer in right-hand pedestal supplied with follow block attachment; four drawers in left-hand pedestal. Double or deep drawer in right-hand pedestal partitioned for books. Can furnish drawers both sides if desired. Finish—Fine gloss finish, golden oak.

Special attention given to filling Export Orders. Send for Illustrated Catalogue and Export Price List. Order direct from factory or through buying and shipping agents, and send us duplicate of orders, so as to avoid mistakes.

Manufactures Gain in Our Exportations.

MANUFACTURES formed nearly one-half of the exports from the United States in the month of July. Speaking with statistical accuracy, they formed 48.27 per cent. of the total domestic exports. For the first time in the history of the United States manufactures are exceeding agricultural products in the exportation of domestic products. Figures just issued by the Department of Commerce and Labor, through its Bureau of Statistics, show that in July manufactures exported amounted to \$40,000,000, against \$31,000,000 of agricultural products, and in the month of June manufactures amounted to nearly \$42,000,000, against \$37,250,000 of agricultural products. In former years agricultural products have greatly exceeded manufactures in the exports of the country, and it is only in recent months that manufactures have equaled or exceeded agricultural products in the export statements.

Even in the seven months ending with July, 1904, agricultural products exceed manufactures by nearly \$100,000,000, but in May, 1904, manufactures for the first time in the history of the country exceeded agricultural products in the statement of domestic exports, and this was again the case in June and in July.

That there is a marked growth in the exportation of manufactures is shown by a comparison of the figures of 1904 with those of earlier years. The total value of manufactures exported in the seven months ending with July, 1904, is \$285,495,728, or an average of more than \$40,000,000 per month. In the seven months ending with July, 1903, the total was \$244,607,852, an average of \$35,000,000 per month. At this rate of increase the exports of manufactures during the calendar year 1904 would exceed those of 1903 by about \$60,000,000 and bring the grand total for the year far in excess of any preceding year.

What Porto Ricans Think of America.

SOME 650 Porto Rican school teachers who sailed for their native island on two United States army transports last month, carried with them ineffaceable impressions that will be of the utmost value in the education of the young, as well as in disseminating information among the islanders in regard to the character and extent of the United States. A remark made by one teacher to a New York *Evening Post* reporter would doubtless have been made by all.

"You Americans," said the teacher, "are so big in every respect. Everything is on the grandest scale. Your railroads, your cities, your stores, and last but not least, your hearts, are big. I think it will do incalculable good when we teachers get back to our homes and tell our friends what a wonderful country and what a wonderful people you are."

These teachers, upon their return, will scatter all over Porto Rico and carry to listening audiences the story of their visit to the United States. They will repeat the story to other listeners, to be passed again from mouth to mouth, and the effect will be to create in the Porto Rican a pride in the fact that he lives on American soil and under the ægis of the great Republic. It will arouse in him a manly desire to accomplish something in this life.

But the greatest influence will be found in the school room and among the rising generation. That army of teachers controls the juvenile mind in Porto Rico, and the generation that is growing up under the care of these teachers will know all about the great nation to which they owe allegiance, and will aspire to be worthy of its citizenship. Our Government never did a better act in all its history than that of bringing the Porto Rican teachers here to learn something of the country and its people. The effect of that act will be one of incalculable good. It will fit Porto Rico for statehood.

All of which is an illustration of the progressiveness of our people and the wise discrimination of our Government officials who use our war vessels in times of peace for the purposes of educational and ultimate commercial advancement of the countries and its dependencies.

Summer Homes That Are Portable.

AMERICAN people are great hands to enjoy warm-weather vacations. A writer in *Country Life in America* has this to say about one way of enjoying such outings: "A great advantage of the portable house for summer outings is that it can be used every year in a different place. A family may have a change of scene every season. The cost of a portable house varies from \$50 to \$500, and is about one-third less than that of a house of the same size built by a carpenter. As summer cottages, they meet the needs of those who want to spend the summer in the country, but who cannot afford to own a house and lot, nor to rent an expensive country home. It is an easy matter to hire a small plot of ground, either at the seashore or in the mountains, at a low cost, and spend the summer in one of these houses. The cost of transportation by freight is not great, for they can be packed into a very small space, each part being flat. They are not so plain as one might suppose, for many of them have piazzas, or wings which may be added if desired.

"I know of such a house in which a family of four have spent their summers at the seashore for several years. The house is divided into five rooms—one used as a living room, three of the others as bedrooms and one as a kitchen. In the first place, the house cost them about \$200, the transportation about \$10, and they pay the landowner \$50 a year for the privilege of putting up the house for the summer. They find it much cheaper than board-

ing, and much more comfortable than camping in a tent. In the winter the house is either left standing or packed away in a neighboring barn. Two men can put up this portable house in a few hours with a screwdriver, a monkey wrench and a hammer."

Queer Freaks of Speed in Battleships.

MANY important facts have been developed by the cruise of the United States battleship squadron to European waters. One of these was that, although rated at much the same speed, some of the ships are far faster than others, while some burn a great deal more coal than others of the same engine power. As the basis of the efficiency of the fleet is homogeneity of squadron, the American Navy Department is giving these questions close study.

One of the battleships averaged a rate of 3.15 knots for each ton of coal consumed, while another averaged only 2.46 knots per ton. Of two sister ships in the squadron—and it is not stated whether these were the 18-knot Maine or Missouri, or the 16-knot Illinois and Alabama—one burned 50 per cent. more coal than the other. The difference was due to the fact that the foul bottom of one made its progress more difficult. It had not been in dock for a bottom cleaning for nearly a year.

It is a question if the battleship squadron will go to European waters next year. Among the officers, especially the younger ones, there is a strong feeling that the summer should be spent on the North Atlantic coast rather than on a foreign station. This is not because the officers desire to visit American watering places. It is due to the desire of many of them to see their families.

First Heat in Race to Build Battleships.

IN the great race that is now on, as reported in a recent issue of THE AMERICAN EXPORTER, between the New York Navy Yard and the Newport News Shipbuilding and Dry Dock Company for honors in battleship construction—a contest that may settle the question of warship construction at American Government navy yards—the private yard won the first heat on August 27th, when it launched the 16,000-ton battleship Louisiana, amid the cheers of a great crowd and the shrill blasts of many steam whistles ashore and afloat.

In the launching of the Louisiana another record was established, the new battleship having the largest displacement of any armor-clad put overboard up to this time for the United States navy. Her sister, the Connecticut, which is building at the New York Navy Yard, will follow closely on the heels of the Louisiana, the date for her plunge having been fixed for September 29th.

American Cruisers Engage in Close Race.

IN a speed race of about 450 miles last month from Newport, U. S. A., to Hampton Roads, further down on the Atlantic Ocean coast, between the American cruisers Minneapolis, Columbia and Prairie, under command of Admiral Wise, the Minneapolis, whose record is something lower than the Columbia's, passed the finishing point three minutes in advance of the Columbia and five minutes ahead of the Prairie.

The Minneapolis beat her former running record, making 20.4 knots during the entire trip. This is remarkably good time, considering the fact that the engine-room crew was made up almost entirely of inexperienced men.

Our Implements Appreciated in South Africa.

UNITED STATES CONSUL W. R. BIGHAM, at Cape Town, Cape Colony, reports: "The inroads being made in the trade of this colony by American agricultural implements, and the fact that the South African farmer recognizes their excellence and will have them if he can secure them reasonably, has excited a good deal of jealousy in the minds of the British merchants here. The mere fact of a British brand on an implement or machine will not capture the farmers here. They want the best, regardless of where it is manufactured. As I do not live in an agricultural district I am not able to say to what extent the different agricultural implements could be sold, but I am told the American hand and sulky plows are very much admired by farmers in the Orange River Colony and Natal."

Better Steamship Service.—American exporters and shippers are experiencing much better business activity on account of increased transportation facilities and lower freight rates. The freight rates, both by rail and ocean, are now very reasonable on the majority of commodities, the ocean freight rates being particularly low. The latter has assisted in building up the export trade, and if the rates continue upon the same low basis there is a fair prospect that the export trade can be still further developed.

Want American Goods in Abyssinia.—Robert P. Skinner, United States Consul-General at Marseilles, France, reports that Goolamally M. Mohamedally & Co., of Harrar, Abyssinia, would like to receive prices from American exporters for boots, shoes, saddlery, rifles, revolvers and swords, camp furniture, jams, pickles, biscuits, candy, table salt, corrugated sheet iron, round iron disks, wire nails, wrought-iron nails, sheet tin and screws; enameled ironware, glassware, knives and beads. Prices should be quoted c. i. f. Djibouti, French Somaliland. Consul Skinner has received a very similar letter from Ohannes Assadourian, Addis-Ababa, Abyssinia.

Fighting Fire in an American Mine

ABOUT a month ago a systematic effort was started to extinguish a fire that has been raging for fifty years in one of the mines of the anthracite coal region in the American State of Pennsylvania.

In all that time the mine has not been worked. It still contains, mining experts calculate, millions of tons of fine coal, chiefly in a vein that runs from thirty to sixty feet in thickness. Preparations for the fight, which, it is estimated, will cost \$1,000,000 and will take two years to win, have been under way for a year, following a careful survey of the workings, the extent of the fire and the possibility of mastering it. All previous efforts have been confined to a spasmodic flooding of the burning portion, which has not been effectual.

The mining officials have discovered that the fire is raging in the loose coal above the water level, that the great pillars of the huge vein are still standing undamaged, and that all the lower veins are intact, the millions of gallons of water which have from time to time been poured into the mine having saved the coal despite the fact that it had no other effect upon the fire than confining it to a certain portion of the mine.

The fight will be conducted from the mountain top above the highest levels of the workings, and not far from the spot where it is believed the fire started fifty years ago, when some timbers were ignited by a miner's lamp, or the flame of a gas feeder.

A mixture of culm and water will be the fire-fighting agent. This not only smothers the fire wherever it reaches it, but hardens into a mass almost as solid as coal, and forms a pillar which prevents the workings caving. It will have the valuable effect in this case of extinguishing the fire and filling up the fire-eaten workings, so that the adjoining pillars, which have supported these workings, may be removed. The company will thus gain great quantities of coal which could not otherwise be touched.

Four 100-horse-power boilers have been erected on the banks of the Schuylkill River, and will operate two mammoth duplex pumps, which will pour into the mine 1,728,000 gallons of water every day. This water will be carried 1,600 feet in ten-inch pipes from the river to the top of the mountain. There it will be turned into big troughs and mixed with immense quantities of the culm, which will be hauled by train from clum banks six miles away. The mixed culm and water will then be run down steep chutes into the burning workings.

When the fire is all out and the mine again ready to be worked, the company will erect one of the largest breakers in the region, and the breaker and mine will give employment to over 1,000 men and boys.

Progress of Piano-Making in America.

IN an article published recently in *Leslie's Weekly* on the progress which is being made in the manufacture of pianos in America, the writer, Charles Ellery Hall, gives an interesting account of the growth of the industry. He describes in detail the methods in force in the factories of an establishment which he considers to be "the greatest manufacturer of pianos and organs in the world."

To this and similar methods employed by other large makers in America Mr. Hall ascribes the fact that American pianos, on account of their excellence, have come to be recognized as standard by all European countries. During the last twenty-five years the shipments of the American product have steadily increased, notwithstanding the higher price of American instruments. The importation of pianos from Europe to the United States is now, and has been for some years, practically a thing of the past. These statements, Mr. Hall declares, apply to "all classes and kinds of musical instruments." This condition of affairs is due, he believes, to the genius and ability of Americans who have invented and introduced improvements and devices that have added quality of tone and durability to the instruments.

The Germans have previously excelled in technique, or the art of reducing to a science ordinary mechanical skill, the Scandinavians as expert cabinet-makers and the Italians as specialists in carving and decorating. Americans, however, says Mr. Hall, are fast becoming proficient in the various specialties named, particularly in the State of Illinois, and they lead in piano-tuning in America to-day. It requires a keen, active sense to discern and correct sound waves. The strings must vibrate in unison, each with the other, and it seems that the American temperament is the ideal one for the highest grade of efficiency in the production of musical sound and tone. The finished instrument must be able to withstand the criticisms of intelligent and critical purchasers.

The superior quality and the vast quantity of lumber obtained from American forests have been among the chief factors that have enabled piano-making to reach its highest perfection in this country. The woods used in American piano bodies grow principally in American forests. They are spruce, elm, black walnut, oak, poplar, hard maple and birch. Foreign mahogany, ebony and rosewood are also used.

Mr. Hall's is a strong indorsement of American instruments, but that it is not too strong is shown by the ever-increasing demand for pianos noted by leading American makers. Some idea of this growth is conveyed in the fact that one company issues, at frequent intervals during a year, single factory orders for the manufacture of 1,500 pianos at one time. Ten million feet of lumber—over 8,000 carloads—are worked up and 200 tons of glue are used in one year in the manufacture of both pianos and organs by this company. Eighteen hundred employees are on the pay-roll, twenty branch offices are

maintained in America and agencies in foreign countries are being established as rapidly as the factory output can enable care to be taken of the trade.

American Typewriters and People Who Use Them.

THERE is comfort for typewriter operators in knowing that highly aristocratic people write on the machines and some of them use the up-to-date typewriters that are manufactured in America and exported to other countries. Mrs. Roosevelt, the wife of the President of the United States, despite her many social and family duties, frequently relieves her secretary and dashes off a letter on the typewriter—if it is not one that must be written by hand—in a style that does credit to the machine and to herself.

In America most men in important positions, who have not become too old physically, are quite as adept at the typewriter keys as are their secretaries. They frequently write the body of letters and turn over the details of addressing and mailing to their subordinates. It is not surprising, therefore, to learn that royalty uses typewriters, and it is still less surprising to ascertain that American machines are in demand and use in quarters where only the best of everything is tolerated. In fact, the inability to use a typewriter among people who are "higher up" anywhere on the globe is now considered to be lacking a useful accomplishment. One might as well expect an ambassador to France to be ignorant of the French language—the diplomatic language—as to be unable to compose a letter upon a typewriter. Some official correspondence cannot be carried on in this way, but the people higher up are gradually breaking down the barriers, and even in diplomatic circles there is a tendency to modernize. Only last month the editor of *THE AMERICAN EXPORTER* received a personal letter from a prominent foreign diplomat who is accredited to Washington. It was informal and its writer said: "I hope you will excuse my use of the typewriter, but my own hand is wretched, I have no one at hand to write for me and I wish to answer you promptly." That letter will be held to the credit of the diplomat, for on inquiry it was found that he had written it on an American typewriter and that he was more proficient than the average operator. It would make a very readable story for *THE AMERICAN EXPORTER*, or any other paper, but the imposition of secrecy in the second letter makes it impossible to say more.

Regarding the use of typewriters otherwise a writer in the *New York Telegram* declares that the Princess of Wales runs her royal fingers over the keys of the typewriter as nimbly as any young lady who earns her living by it. Nearly every one connected with the typewriting world—those, we mean, whose duty it is to sell the machines—knows of the surprise visit the Kaiser paid one morning, accompanied by a certain German prince, to the depot of a firm well known in London, and there selected a machine for his own private use. His Majesty is quite an expert typist; so, too, his Majesty of Wurtemberg, and the Crown Prince of Saxony.

When Prince Max, of Saxony, served religion in the capacity of a humble priest in the East End of London a few years ago, he bought a machine, says the *Telegram*, quoting *Home Chat*, and caused the useful instrument to be taught to the waifs and strays of Whitechapel. He himself is a capital typist, and in his professional capacity at one of the universities of Saxony he finds it a useful accomplishment.

In the days when the genial and popular Princess Maud (Princess Charles, of Denmark) used to go about the country and pay quiet visits under the name of plain "Miss Evans," her Royal Highness was fond of typing her letters to those of her more intimate friends. But perhaps of all the members of the royal family the Princess Christian is the ablest typewriter. The machine used by the King's sister is fitted with ivory keys, and is silver plated, and it has a German set of characters as well as English.

"Nothing pleases the King of Greece—brother of Queen Alexandra—more than the typing of letters," says *Home Chat*, "and most of the nobles of his kingdom have in their keeping to hand down as heirlooms His Majesty's typewritten letters, signed with his autograph. It is interesting to see, too, that most of the correspondence emanating from Marlborough House is now typewritten—that is, the Prince's own—but whether his Royal Highness is following in the footsteps—or, should we say handsteps?—of his royal spouse, and is typing his own letters, we are not warranted in saying. The impression is he is doing so.

"The versatile Lord Rosslyn is another noble typist who regards his machine with longing eyes. So expert is he as a writer, the speed at which he can write putting into the shade many a clerk typist, that during his detention as a prisoner of war at Pretoria he produced a typewritten newspaper there, edited, printed and published straight from the machine he took out to the front with him. Sir Sydney Waterlow, than whom there are few men busier, would in his zeal and devotion to typewriting be prepared to classify it as one of the fine arts, one might say. And, indeed, such writers as S. R. Crockett, W. L. Alden, Fenn and Arthur Wing Pinero, typists all, might be said to be of the same opinion.

"The pathetic side of this interesting subject is to be found at the Royal Normal Blind College, Norwood, where there are in use fully 100 typewriting machines. These are worked in the ordinary way by the sightless pupils, who, after a course of training, become very able operators. Mentioning this reminds us that there is in London at least one journalist who, practically blind, is, nevertheless, able to sit down at his machine day after day and type off scholarly leading articles upon the topics of the day, and folio after folio will tumble off his machine without so much as a literal mistake occurring."

Big New American Steamship in Commission.

MOVING majestically and slowly in haze and smoke the big new steamship "Minnesota," twin sister of the "Dakota," docked in the port of New York last month. These ships are intended for the Pacific Ocean trade, connecting the United States and the Orient by stronger transportation ties than at present. The "Minnesota" is the first of the two to come into effective being and her arrival in New York harbor was an occasion for the great demonstration which occurred. Within a few days of the time this article is printed the "Minnesota" will be on her way around Cape Horn and up the Pacific Ocean to Seattle, the American port from which she will sail to the Far East.

We have printed descriptions of the "Minnesota" and her sister ship, but there are some interesting features of the vessel that will be of interest to our readers, even if in some general details there may be a repetition. It is only natural to look for Americanisms in the "Minnesota," and they are present. The most noticeable feature in the great ship—her cargo-carrying capacity and the fine passenger accommodations being passed over quickly—is the electrical equipment, the most extensive ever installed in any steamship.

There are six units, averaging 150 horse-power each, installed in special space near the engine rooms. Their electric power supplies energy for thirty-eight separate winches on deck for hoisting cargo, of twenty, twenty-nine and thirty-five horse-power. As an example of their capacity, it is stated that an electric twenty horse-power winch will lift three thousand pounds at the speed of 170 feet a minute with a single whip.

The ship's immense rudder is turned by electric power, the electric steering gear being under absolute control either from the bridge, the bridge house or the pilot house beneath. There are warping capstans to assist in berthing the ship, connected to 100 horse-power electrically driven motors. The ship is heated, lighted and cooled by electricity, and in the pantry the steam tables used for heating food or dishes have been supplanted by electric heaters. On the forward bridge of the ship is mounted a twenty-four-inch searchlight, whose light and control of movement are directed by electrical connection from the main bridge, 350 feet aft.

There is a complete telephone system for the use of passengers, 370 telephones being under the control of an operator at a central telephone exchange, the same as on land. Besides this, there is a complete system for the use of the navigating and engineering departments of the "Minnesota."

The "Minnesota" was not built for speed, but two triple expansion engines of 10,000 horse-power each drive the twin propellers and give the huge bulk a speed of fifteen knots. Steam is furnished at 250 pounds pressure from water-tube boilers. There is a complete refrigerating and fresh-water plant.

Waterweight bulkheads divide the engine rooms, and throughout the ship, which has also a cellular double bottom, there are transverse and longitudinal bulkheads, which renders sinking impossible.

Particular attention has been given to the comfort of the passengers. There are accommodations for 218 first-class and sixty-eight second-class passengers. The steerage space is allotted according to the custom of steamships plying between Oriental ports. There are separate accommodations for 2,300 Chinese, who have a pantry and a galley, commodious wash-rooms and an opium den where ventilation is unknown, all for their special use. This is aft on the main deck.

Forward on the main deck are berthings for carrying 1,300 soldiers. For the first-class passengers there is the usual library, women's room and smoking room, as found in the best of the Atlantic liners. The dining saloon, furnished in mahogany, has a seating capacity of 200. The promenade decks are unusually wide, and forward on the upper promenade deck is a deck space, awning covered, the full width of the ship, seventy feet at that point and fifty feet in depth.

In life-saving equipment the ship is abundantly provided with boats and life rafts. An American idea is shown in equipping one of the largest lifeboats with a hydrocarbon motor and propeller, in which the danger against fire is cared for by an electrical indicating system, which locates high temperatures in parts of the ship, and besides the usual appliances for injecting steam there is a special apparatus for filling with extinguishing gas any section of the ship where there is a fire.

Device to Prevent Seasickness.

NOTWITHSTANDING the high pitch of comfort and luxury attained by modern ocean passenger steamships, no reliable preventive or immediate remedy for seasickness has as yet been discovered. It will be good news then, for the many who look forward with dread even to a steam trip on the waters of a lake or land-locked harbor, to learn that the managers of one of the largest American steamship lines are taking steps to test thoroughly a device for diminishing the rolling of steamships in a sea.

This device, which is the invention of a German naval architect named Otto Schlick, according to a writer in a recent issue of *Harper's Weekly*, involves making use of the principle of the gyroscope familiar in the toy sometimes known as the Archimedean top, where a fly-wheel whose weight is concentrated near its circumference is mounted in gimbals so that it is free to rotate in any plane.

Herr Schlick proposes to mount a fly-wheel carried on a vertical axis in a frame which is suspended on a horizontal axis transverse to the length of the vessel, the whole mechanism being placed at the bottom of the hold. To

rotate the fly-wheel with the necessary high speed, electric motors or steam turbines would be employed. There would be hydraulic brakes and band brakes to restrain and regulate the motion of the fly-wheel when necessary. The effect of the rapidly rotating fly-wheel is to develop forces that would oppose the oscillation of the vessel, making it slower and reducing its extent materially.

An elaborate calculation was made of the size and weight of such a fly-wheel, and it was ascertained that for a steamer of 6,000 metric tons (5,905.5 English tons), a fly-wheel 4 meters (15.12 feet) in diameter, weighing 10 metric tons (9.842 English tons) and moving with a peripheral velocity of 200 meters (656 feet) per second would have a most marked effect.

Lighthouse for Dangerous Shoals.

ALBERT F. EELLS, an American inventor, has undertaken to do what some of the most distinguished engineering officers in the service of the United States Government have made repeated failures of—build a lighthouse that will withstand the fierce storms that rage around Cape Hatteras on the Atlantic Coast, and maintain a firm foundation on the treacherous shoals there. More than this, Eells has volunteered to put up such a structure, equip and maintain it for a full year before a penny is paid to him by the Government.

While Mr. Eells is confident of his ability to carry out this large contract, the Government engineers are highly skeptical and say that his lighthouse will surely be swept away, carrying with it all the money that may be invested in the enterprise. The history of the Government's attempts to put up a permanent light to warn navigators of the dangers of Diamond Shoals, is one of consistent failure, covering a period of ten to fifteen years. The strongest foundation and the stoutest ship have both been wrecked and pounded to pieces.

Last year Eells appeared in Washington with a scheme to build a lighthouse on the troublesome shoals. He was backed by several prominent statesmen, and in a remarkably short time secured the passage of a bill under which he is to put up a "substantial and sufficient lighthouse and fog signal of the latest and most approved construction" on Diamond Shoals. The foundation proper must be at least thirty feet high, and there is to be constructed above this a circular steel tower two hundred feet in height from which a light is to be displayed. Eells is to have a free hand in drawing his plans of construction below the 30-foot line; the work above that mark must be approved by the lighthouse board.

After the project is completed the Government will supply the lens and other apparatus necessary for the light signals, and then Eells will undertake to keep the affair safely anchored for the period of a year. If at the end of that time the structure is still above the waves, it is to be turned over to the Government for a four-year test. If it proves equal to the strain of that period the contractor will be considered as having fulfilled his pledge, and a check of \$590,000 will be handed to him by the Treasury Department.

In the event of failure none of Eells' associates nor his heirs is to have a claim against the Government on account of the lighthouse.

Automatic Features of New Steamship.

A FEW weeks ago the largest fresh-water steamship in the world was launched at Lorain, Ohio, U. S. A. It is 560 feet long—62 feet longer than any other steamship on the Great Lakes of North America. But the most wonderful thing about this new steamship is the fact that it will need about half the sailors and longshoremen that the smaller vessels need. Machinery is used in every case where labor can be saved.

The hold is made in the shape of a great hopper, 409 feet long, and with thirty-three hatches. It can thus be unloaded quicker than any vessel in the world, and by machinery, not by longshoremen. There will be no stokers. The furnaces will be fed by automatic machinery, and the ashes will be taken out by machinery also. There is a steam windlass for handling the two 8,000-pound anchors, a steam capstan and a machine for making fast the mooring lines. Every hatch is opened by machinery.

Last month the Augustus B. Wolvin, as the new vessel is called, took on a cargo of 12,500 tons of coal, thus breaking the world's coal-carrying record. The steamship is made of steel throughout, and cost \$500,000. If the steamships of the future are to be like the Augustus B. Wolvin, half of the sailors and longshoremen will have to look elsewhere for employment.

Will Exploit American Agricultural Machinery Abroad.—Mr. H. Culstrandt, representing the Roderick Lean Manufacturing Company, of Mansfield, O., U. S. A., has gone to Europe, where he will remain some eight months, during which time he will visit the leading importers of agricultural machinery in Great Britain and on the Continent. The Roderick Lean Manufacturing Company export their cultivators and harrows to all countries of the world. Their latest catalogue will be sent, upon application, to any importer of agricultural machinery.

Even Our Aborigines Are Progressive.—San Francisco has among its citizens a full-blooded American Indian who rides an American motor-cycle. The Indians used to be fond of bicycling when that sport was most popular, and one, at least, of the earlier Americans has turned his attention to the use of the power-vehicle.



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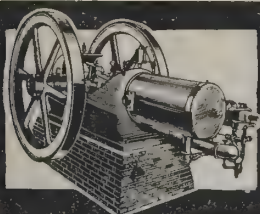
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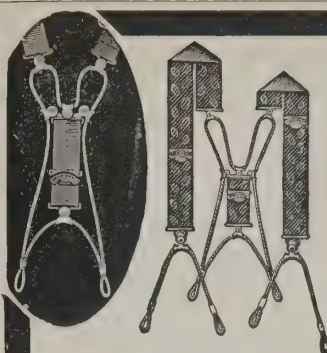
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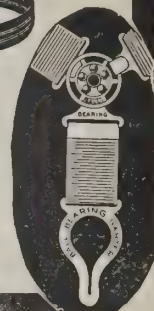
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TESTIMONIAL. NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 13 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

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RACING COMPOUND for Wooden Yachts' Bottoms,
Bright and Smooth.

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The most interesting kitchen utensil ever invented. It slices every kind of fruit or vegetable into an infinite variety of unique and fancy designs, making an entirely new, novel and delicious product.

Is invaluable for making delicate salads, garnishings, etc. Makes Juliennes ten times as fast as the ordinary method and is the only utensil that will produce Lattice Potatoes. Is extremely simple to operate and sells rapidly wherever shown.

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We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

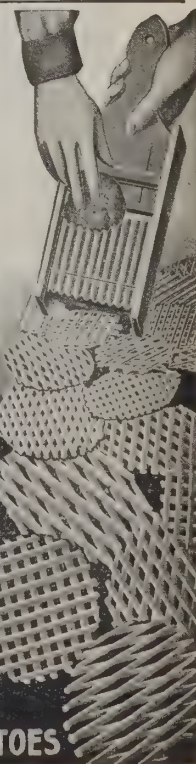
With Our Machines seed is quickly cut to best advantage. Planting, fertilizing and covering are accomplished at any depth and width of row desired. Spraying is effectively done for bugs and blight. Digging and sorting are made pleasant and agreeable work by our time and labor saving machines.

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JULIENNES

LATTICE POTATOES

New York's Big New Subway Seen by Parisian.

PIERRE VEBER contributes to the Paris edition of the New York *Herald* a graphic letter from New York, describing our great new subway. We reprint below a substantial summary of his article, for it shows, through foreign spectacles, what we are doing in the chief city of America:

"New York was at a disadvantage, compared with other countries, from which all Yankees suffered cruelly. New York had no underground railway like the 'Metro' of the Parisians. One can imagine what a humiliation that was for a race so eager to have perfected every means of breaking one's neck in speed. But the Yankees have no longer any reason for envying anybody in this respect. They do to-day own a 'Metro' and, as must needs be confessed, the best of all the 'Metros.' Thanks to the directors, I have been able to visit it. The line will not be really in working order until October, but the tunnel is made, the rails are laid, and they are finishing the stations.

"At the station nearest the harbor we went down to it by the staircase of entry. There is no outside show. The features of the station building are quite plain. The frightful modern style of fairyland which spoils Parisian stations has been avoided. Down below, under the tunnel arches, we wait for the locomotive which will push the truck with wooden rails on which the seats have been placed. It is good to be there, underground. Above the people are stewing in a heat of nearly 100 degrees.

"We set off. A big lantern placed in front of the car throws upon the way a flare of light. Some ill-defined things come out of the obscurity, are lighted up for an instant, and vanish again into the night breath. Sometimes it comes to a halt. An engineer leaps to the ground, clears the road from obstruction, and we go on again. On the road, under the glare of the lamp, at the corner of the beams supporting the tunnel, appear the inquiring faces of the workmen, whom we have disturbed at their labor. Who are we, and what is our business?

"Yonder, quite at the tunnel's end, is a gap of light. We slacken speed; it is a station. The wall is tiled again with bright bricks. They are placing the turnstiles in position and cementing the stairs. The daylight falls, shaded through the glass of the roof. The equipment of these stations will be quite luxurious and in good taste, and, above all, they will not have the funereal uniformity of the stations of our line. Apparently, they have sought to diversify the appearance of the stations, to give the city under the streets an air of variety that it certainly lacks above. The arches of the subway are of great size. This long tunnel contains four tracks. Experts will know the resistance which it offers to the weight of earth above it and will be astonished proportionately.

"Such in real truth is the biggest subway in the world—and this is not a slight compliment in a country where everything, from the house to the accident, strains to be the 'biggest in the world.' And, in listening to these words, which regularly crop up in all the descriptions which New York people give you, I thought of the announcement made in a journal of lyric artists, 'X, the biggest dwarf in the world!' That must have been an American dwarf.

"Of the four tracks two are assigned to the general service, to the trains which stop at each station, of which there are thirty in all. The two middle tracks will be used by the express trains, which will make only four stops. It will thus be possible to traverse the island in twenty minutes.

"One can imagine in advance the terrible rush of office clerks and business men when they leave off about 6 o'clock their work in this illimitable city to get back to more pleasant districts where the houses are smaller and the trees are more frequent.

"I think of the probable bustle. Here all the citizens in the street have the air of people catching the train, but where they are catching the train they have the air of people taking a town by assault. What fine races there will be to the approaches of the platforms! How all the football-players, the baseball-players and players of other kinds of ball will struggle to gain their car. And what splendid lessons of energy, of self-preservation and of sovereign force the men will give to the women! Alas! the men there have few opportunities of making their supremacy felt by those who despise them and who have found in marriage a sure means of oppressing them!

"The locomotive keeps on pushing us. The endless succession of beams continues. Our guides tell us the districts of the city under which we are passing and the numbers of the streets. We are in the hotel quarter. We are now under the millionaire quarter, and now under Central Park we take a turn. When we are told this it surprises us in the profound silence that reigns. The procession of beams ceases. In this part the work is not finished. We creep now along the tunnel, which is quite bare, like cockchafers in a telescope. It gets colder, and, in proportion, less comfortable.

"At last there is a halt. There is a slight maneuver and the car goes on again. This time it runs into the open under the sky. It is the northern part of the island—a district which has not yet been altogether settled. Tired of being so long underground, it shoots upward and runs along a viaduct. Some furlongs further on is the terminal station—a provisional one. In time the net will be extended and the rails will run to the confines of the city.

"They will traverse by a tunnel the arm of the sea which separates these districts from Brooklyn; they will pass above the river which checks them at the north; along its passage the 'Metro' will stretch out transverse lines, ransacking this encumbered piece of land and turning aside a good portion of the human herd which every day in larger numbers crowds itself into the cars and wagons. The first line has cost about \$35,000,000. It is easy to

calculate what its working and its maintenance will cost, and as far as the income is estimated it is already being discounted.

"And thus there will be involved in this corner of the world, where electricity is accumulated without cessation and where you can feel its environment of a thousand currents, a little more of that mysterious and redoubtable force. There is not an inch of ground here which does not hide its cable. Cables are everywhere—in the air, swinging from roof to roof; under the pavement, where the clasp of the tramways seizes them; above the sidewalks, where the arm of the trolleys grazes them. When one realizes what this vortex of fluid electricity means, animating thousands of machines, lighting millions of lamps and causing its wreaths of wires to vibrate without truce or respite, one begins to comprehend the kind of commercial frenzy which shakes this city, whose inhabitants are rushing madly toward an ideal of dizzying riches."

American Fishes Found the World Over.

NOT only are American manufacturers found the world over, but fishes that are natives only to the waters of the United States may be caught in the streams of the principal countries of the world. Long Island oysters can be had in the waters of Argentina, American brook trout are served fresh from the waters of Ireland, and American travelers in New Zealand, Italy, Germany and France can obtain from the streams of those countries black bass that is native only to the United States.

The foreign governments are rapidly finding out that the fish culturists of the United States are way ahead of those of any other nation in the scientific propagation of all water species. Knowing also that this is a generous government, they feel free to ask for specimens of our best fishes for planting in the waters of their respective lands. Hundreds of thousands of fish eggs and small fry are shipped from the stations here to European and South American countries, and, in fact, to governments all over the world. No charge is made for the fish and eggs other than the cost of transportation.

As a usual thing the Fish Commission delivers the freight to the steamship agents of the country to which it is to go, at New York City. Last year about 700,000 eggs were sent to Ireland, Wales, Germany, Switzerland, Tasmania and Brussels. Twenty-five thousand brook trout eggs were shipped to Ireland, and 50,000 lake trout eggs; 20,000 steel-head trout eggs and 10,000 land-locked salmon were sent to Wales. A large number of yearling-spotted catfish were shipped to Brussels, in care of the Minister of Agriculture.

Commissioner Bowers received a letter the other day from the head of the Fish Bureau of the Italian Government, telling of the success that attended the introduction of American black bass and sunfish into that country some five or six years ago. Both have thrived wonderfully, and now are classed as important commercial fishes in Italy. Different species of the American bass have been introduced into a great many European waters, as well as crappie and sunfish. Some of the rivers of the Old World have become depleted of fish, and it is found that specimens from the United States are harder and more prolific than the native species.

One of the men connected with the Fish Commission here was commissioned by the Government of Argentina a year or so ago to go down there and superintend the establishment of a hatchery. About six months ago a large shipment of Long Island Sound oysters was sent to the same place. American catfish, rainbow trout and bass are plentiful in the waters of New Zealand, and Englishmen who can afford it make trips to that country for fine fishing.

How American Buildings Are Cooled by Water.

OF much interest to dwellers in warm climates is a description of a system for cooling the interior of buildings recently given by Alfred Siebert, a prominent American authority on all questions of artificial cooling, in which he advocates the use of water as a medium and points out its advantages over chemicals, ice and refrigerating machines. Application has been made for a patent to cover the system described.

The simplest and cheapest method, according to Mr. Siebert, is to use the heating coils, if an indirect heating system is in use. This means that air is blown over the coils placed in the walls and ceilings by means of a blower or fan and conducted to the rooms by ducts and registers. All that is necessary then is to connect the pipes supplying steam or water to the coils of the water-cooler, or of any other means of refrigeration, with the proper amount of valves interposed. The change can be made at any time.

Many of our readers in warm countries will appreciate the force of Mr. Siebert's argument, when he says it is not advisable to use brine or ammonia direct for cooling the air, even if they are used for cooling only. Brine will corrode the pipes, and ammonia pipes may leak and cause smell in the rooms. Furthermore, brine or gas might have a temperature below the freezing point, and then condensation will form on pipes and coils, which is a great loss and causes dripping, or will freeze, reducing the cooling capacity of the pipes and again cause loss of refrigeration by using part of it for congelation.

Locomotives for Japan.—One of our big American manufacturers is completing the last of the fourth order of locomotives for the Japanese Government, and they will be shipped within the next few days. The locomotives are intended for use on the Seoul-Fusan Railroad in Corea. About 100 small engines have been built for Japan by this concern since the war with Russia began.



No. 708. Two and one-half inch openwork gilt frame, showing pearl oil painting on glass. Size of glass, 10 x 20. \$10.20 net, per doz. Variety of subjects.

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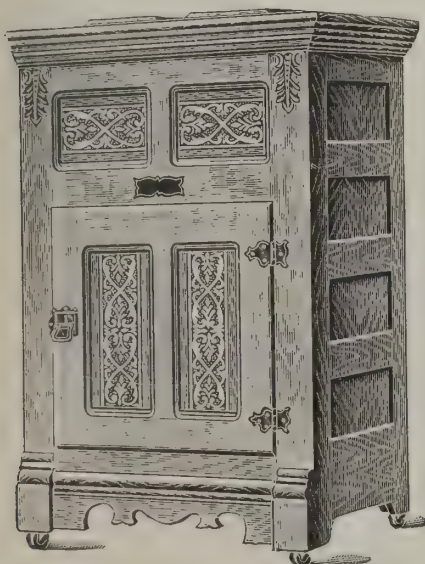
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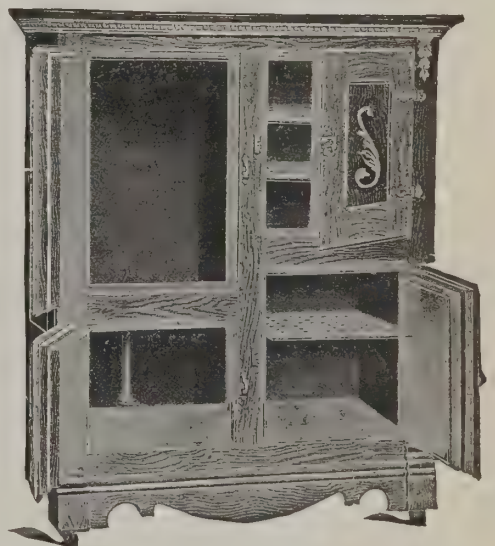
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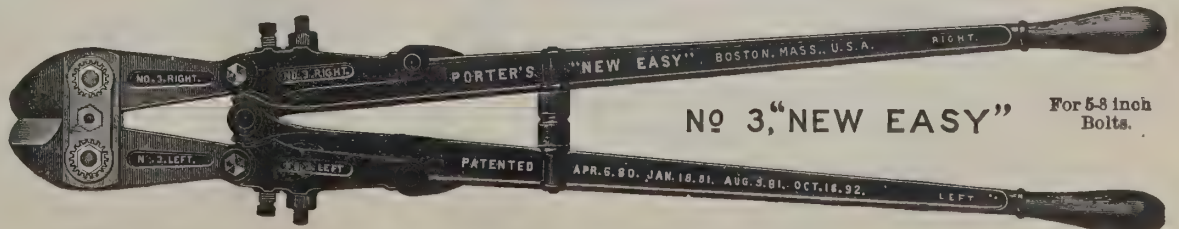
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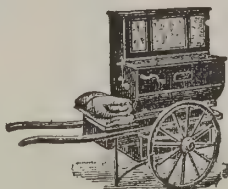
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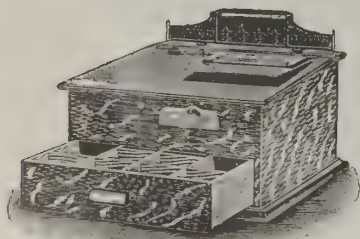
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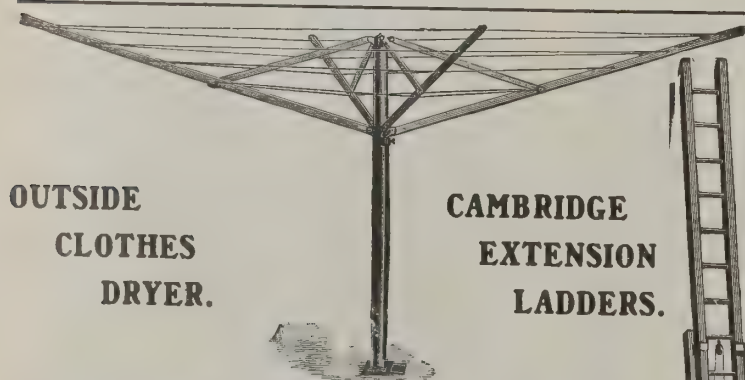
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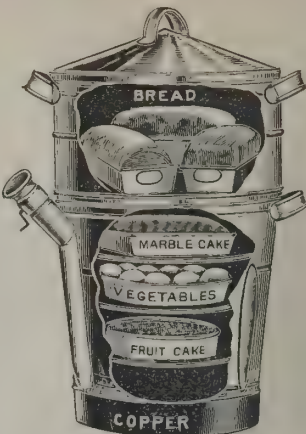
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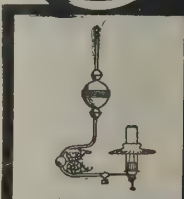
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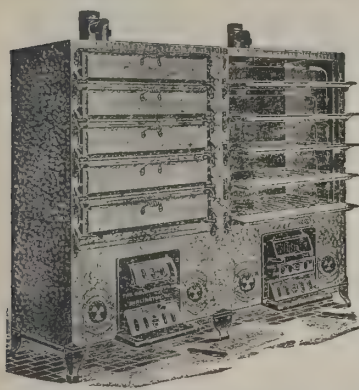
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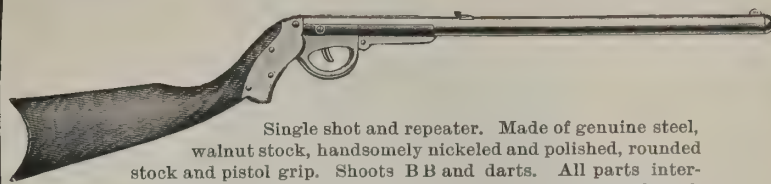
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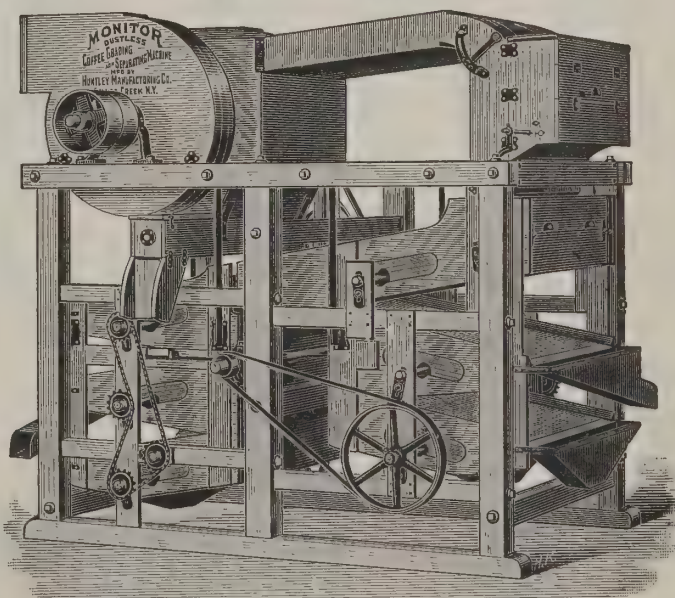
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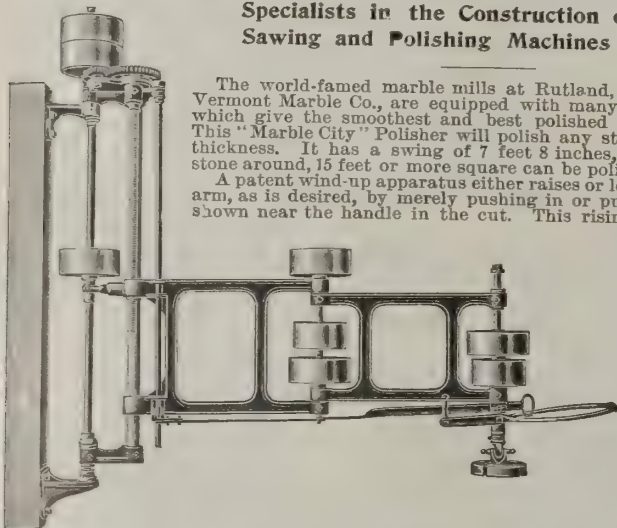
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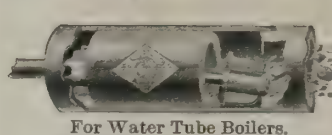
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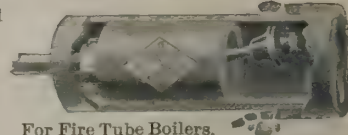
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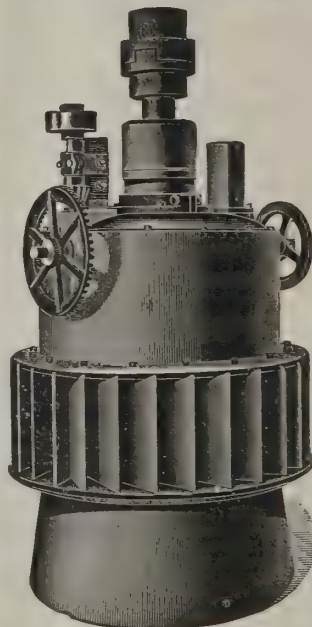
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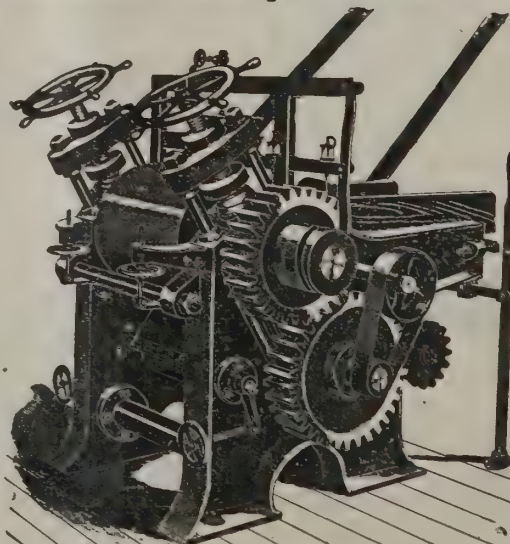
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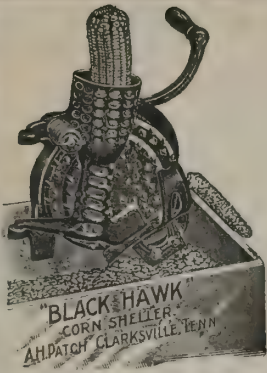
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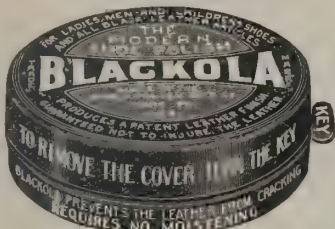
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We Excel and Undersell All on Everything Electrical.
PRINTED MATTER IN ALL LANGUAGES.

OHIO ELECTRIC WORKS, CLEVELAND, OHIO, U. S. A.
Agents wanted. Send for New Catalogue. Cable Address: "Fletcher, Cleveland."

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were awarded the Grand Prix and Gold Medal at the Universal International Exposition of Paris, 1900. All competition eclipsed.



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HAVE THE MOST EFFECTIVE GUARD TO PREVENT CATCHING OR TEARING OF MATERIAL
MADE IN NICKEL-PLATE AND JET BLACK.

CONSOLIDATED SAFETY PIN CO.,
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Just the Thing for the Kitchen.
PAUL KITCHEN CABINET No. 50
has hardwood frame and legs, oak finish, whitewood top, 26x47 inches; height, 29 inches; has 2 sliding flour bins, with 2-ply veneer bottoms, one partitioned for cornmeal, graham flour, sugar or salt; 2 drawers; 1 bread and 1 meat board.

Write for catalogue and discount.
Delivered k. d. f. o. b. New York, Boston or Baltimore. Each cabinet weighs 90 lbs. Packed 2 to crate. Size, 4 ft. x 3 ft. x 2 1/2 ft., or 30 cu. ft.; this is for 2 cabinets packed together. 2 cabinets weigh, packed, 210 lbs.

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Manufacturers and Exporters of
ODORLESS PUMPS AND APPARATUS.
Orders Filled Through Commission Houses.
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MANUFACTURERS OF
POLISHOLA,
The ideal paste for all kinds of black leather shoes.

Patent Leather and Russet Pastes, Empress, Queen and Princess Dressings, Ebony Waterproof Polish.
Also other Polishes and Dressings of every description.
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MANUFACTURERS AND EXPORTERS OF
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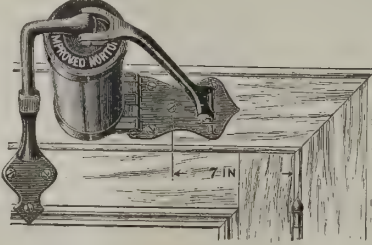
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IMPROVED
Norton Door Check and Spring.



Our regular checks are made in six sizes, to fit any size door; are either right or left hand and may be applied to either side of a door without change. Controlled by air and a strong spring. The oldest and most reliable check made. Orders filled through commission houses. Correspondence solicited. Catalogues on application.

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For Baling Cotton, Wool, Rags, Hemp, Etc.
Simple, compact and very powerful; worked by either hand or steam power; not liable to get out of order and very durable; they are the best baling presses made.
Prices from \$175 to \$350, according to size.
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COTTON SEED OIL MILLS. We make various sizes, of capacity from 5 to 150 tons of seed per day. Our mills embrace all the modern improvements, and will give the best results. We will erect and complete, guaranteeing capacity.

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OUR HOPS ARE CAREFULLY SELECTED AND PUT UP FOR SHIPMENT TO ALL PARTS OF THE WORLD.

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THAT'S WHY FOSTER FRICTION PLUG RUBBER HEELS ARE SELLING SO FAST.

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"N. E. VAN VOORHIS, Newton."

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is the most efficient and most durable machine of its kind ever made. It has no rival for capacity, for perfect separation and ventilation. We also manufacture a complete line of Machinery for separating, cleaning and polishing all kinds of grain. Send for catalogue and full particulars. Address

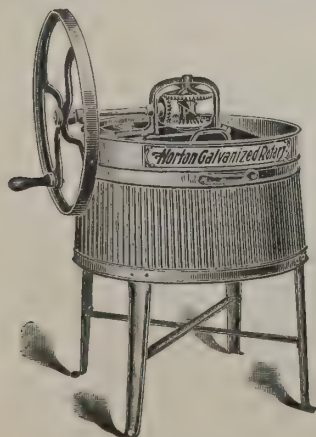
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Horton Galvanized Rotary Washer.



Horton Galvanized Washer No. 9.

Built of steel throughout, including the legs, and heavily galvanized after being constructed.

Lighter, stronger and more durable than wooden machines.

Will not rust or rot, and not affected by climatic changes.

For Foreign Markets Only.

Upon receipt of \$72.00 in U. S. gold or its equivalent we will crate and deliver f. o. b. (shipped K. D.) New York, Boston or Baltimore, 12 Horton Galvanized Rotary Washers No. 9.

Each washer measures, crated, 8 cubic feet. Each washer weighs, crated, 80 lbs.

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FORT WAYNE, INDIANA, U. S. A.

The Premier American Shoe Polishes

OKOLITE,



An Oily Paste Polish for ALL Black Leathers, Also

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For ALL Russet and Tan Shoes.

We are Manufacturers of over 60 varieties of Shoe Dressings, Polishes, Harness Oils, Etc.

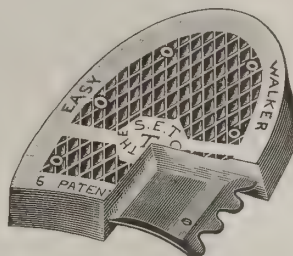
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6 dozen Black Okolite, 3 dozen Brown Okolite, 1 dozen small and 1 dozen large Black Combination, 1 dozen small and 1 dozen large Russet Combination, 1 dozen Patent-Leather Polish, 1 dozen Easy Method Dressing and 1 dozen 7 Oil Blend Dressing for Ladies' Shoes. This entire combination offer in one case for \$12.00 in U. S. currency. Orders executed either direct or through export commission firms. Correspondence solicited.

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The Easy Walker Rubber Heels

Are Acknowledged the Best on Earth by All Practical Shoemakers.



Contain patent spring steel holding plate, which facilitates labor and saves the cost of cement; attached permanently in five minutes; made of fine Para rubber; will outwear two pair of leather heels.

Whole and Half Heels for Men and Women,
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Manufacture of RUBBER STAMPS

A PROFITABLE ENTERPRISE.

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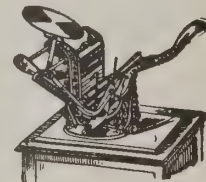
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STEEL DIES AND STENCIL SUPPLIES.

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LEADS THEM ALL,

So Our Testimonials Say.

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition and American Institute, New York City.

New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

A PAINT THAT PROTECTS.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.
MILLS EDWARD, Master Schooner "Florence Shay."

MILLER BROTHERS

BUILDERS OF

CARRIAGES

IN THE WHITE

AMESBURY, MASS.
U. S. A.

Catalogue and Prices
on Application

The Tucker Alarm Cash Till.

A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

As a piece of cabinet work, well worth its cost.

Sounds the alarm promptly if tampered with. Delivered (3/4 doz. in a case) free to vessel. Catalogues in English and Spanish.



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Selling Agents: John H. Graham & Co., 113 Chambers St., New York City.

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Waverly Park, Newark, N. J., U. S. A.

"Round Pattern," Type F

VOLTMETERS and AMMETERS.

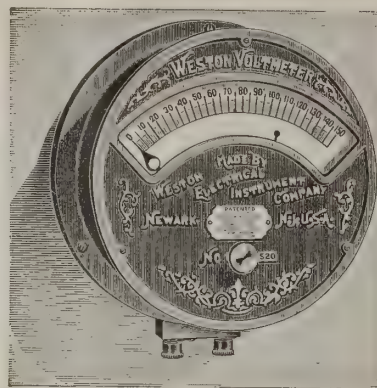
These instruments are particularly suitable for Isolated Plants and Feeder Circuits in Railway and Power Plants. Voltmeters in ranges from 3 to 750 volts; Ammeters in ranges from 1 to 2,500 amp. All Weston Instruments are unsurpassed in excellence of workmanship, in accuracy and economy of operation.

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Cable Address, "Artesianos, New York."

Manufacturers of everything required to drill and complete Wells for

WATER, OIL & GAS.

Any depth from 25 to 5,000 feet.

Also Special Tools for Soundings and Test Borings for Water and Mineral Prospecting and Developing Mines; Light, Portable Outfits operated by Man Power. We furnish Pipes, Casing, Sucker Rods, Tubing, Fishing Tools, Bollers, Engines, Etc.

Complete Machines and Experienced Men sent to any Country or Climate. We have the largest and most varied experience of any firm in this business in America.

Catalogues with hundreds of engravings and estimates furnished on application.

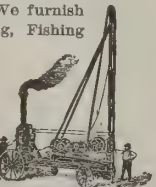
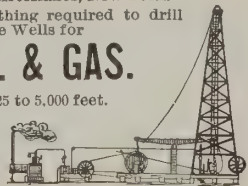
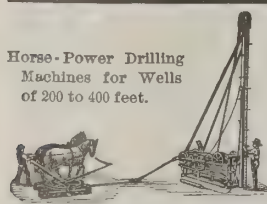
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Machine for 2,000 to 4,000 ft.

Steam Rigs for 200, 350, 600 and 1,000 ft.



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HIGH-GRADE FIRE APPARATUSES.

FIRE EXTINGUISHERS,
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For Storehouses, Homes,
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or Fire Departments.

Please pay us a visit when you come
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When the apparatus is loaded it will throw a stream of gas (which gas is the best fire extinguisher) at the distance of 50 feet. Any woman or child can operate it as well as an expert man. It is always charged and ready for use, but it has no

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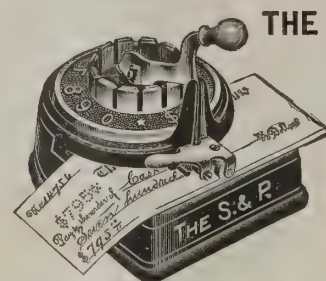
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AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.



ANY SIGN may be had in place of \$ when desired.



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The S. & P. Pinking Machine

BEST AND CHEAPEST.

Cuts fancy edge on silk or cloth. Will cut Chamol's Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

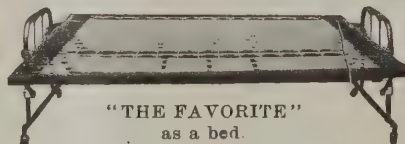
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BATTLE CREEK IRON BED CO., Ltd.,

MANUFACTURER OF

K.-D. METAL FOLDING BEDS FOR EXPORT.

"THE FAVORITE" METAL FOLDING BED



"THE FAVORITE"
as a bed.

is the latest creation in folding beds and can be easily opened or closed by a child of five years of age. Opened ready for use "The Favorite" is a full-sized bed, being 6 feet long by 4 feet 6 inches wide. Closed "The Favorite" can be used as a "Davenport," or can be adjusted by a most simple movement to a reclining-back position, as shown.

FOR FOREIGN MARKETS ONLY.

Upon receipt of \$45 (U. S. gold) we will crate, ready for transportation abroad, and deliver f. o. b. New York, 6 of "The Favorite" (Knock-Down) Metal Folding Beds. Each bed weighs 120 lbs. net; packed 2 in a crate, weigh 275 lbs. gross.

Gross weight of 6 "Favorite" Metal Folding Beds, packed 2 in a crate, 725 lbs. Orders received direct or through export houses; when ordering through the latter, specify "The Favorite," and please send us duplicate of order.

Battle Creek Iron Bed Co., Ltd.,

BATTLE CREEK, MICH., U. S. A.



"The Favorite"
as a "Davenport."
Reclining-Back Position.

TRADE-MARK
REGISTERED.**A. P. W. PAPER CO., ALBANY, N. Y., U. S. A.****The largest manufacturer of TOILET PAPER in the world.****CORRESPONDENCE SOLICITED.****Brockton Last Co.**
LASTS IN ALL SHAPES
AND STYLES,**FOR MEN, WOMEN, YOUNG MEN AND MISSES.**

Orders filled through commission houses.

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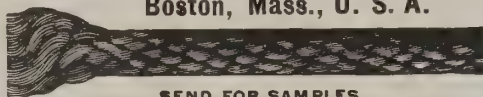
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Air Beds, Air Cushions, Air Pillows, Atomizers, Bands, Bandages, Bath Caps,	Bed Pans, Breast Pumps, Bulbs, Camera Sets, Colon Tubes, Cupping Cups, Dental Dam,	Dilators, Face Bottles, Finger Cots, Gas Bags, Gloves, Ice Bags,	Ice Caps, Medicine Droppers, Nasal Douches, Nipples, Nipple Shields, Nursing Fittings,	Obstetrical Cushions, Pessaries, Plant Sprinklers, Plaster Bowls, Politzer Bags, Rectal Tubes,	Rubber Bands, Stomach Tubes, Stoppers, Syringes, Teething Pads, Teething Rings,	Tourniquets, Tubing, Umbrella Rings, Urinals, Water Bags, Water Beds, Water Bottles.
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And a full and complete line of Fine Rubber Goods for the Hospital and Surgical Trade. Our new Illustrated Catalogue "D" sent free on application.

SILVER LAKE COMPANY, The Original Manufacturers of Solid Braided Cordage.

WINDOW SASH CORD, } COTTON, LINEN OR
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THE BEST IS THE CHEAPEST:
CLOTHES LINES,
AWNING AND MASONS' LINES,
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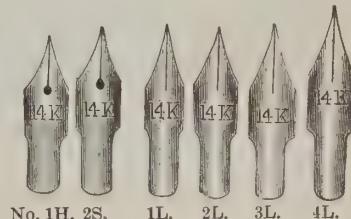
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For Jobbers and FOUNTAIN-PEN Manufacturers.

All Pens warranted 14kt. gold with best hard iridium.
We make Imprint Pens; Imprints free on quantity orders.**SMOOTH POINTS GUARANTEED.**

Full line Long and Short Nib Gold Pens. Send your name and let me quote you export price.

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No. 1H. 2S. 1L. 2L. 3L. 4L.

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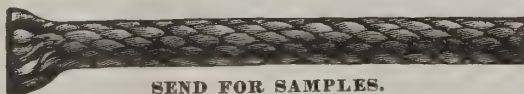
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SAMSON CORDAGE WORKS,**Boston, Mass., U. S. A.****SAMSON BRAND.****INQUIRY OFFICE FOR NORWAY, SWEDEN
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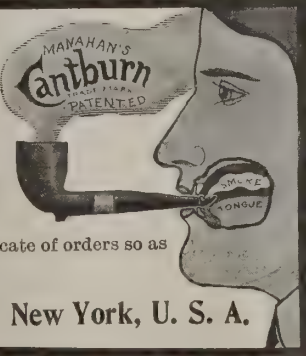
Can't burn the tongue. Always sweet, dry and clean.

Saliva can't get into the pipe, become saturated with POISONOUS NICOTINE, leak back into the mouth and give you TOBACCO HEART. No valves, absorbent piths or smoke filters used, to become filthy and spoil the flavor of your smoke, and you can smoke any tobacco.

Fine briar and hard solid rubber stem, bent or straight.

Send export orders through buying and shipping agent, and send us duplicate of orders so as to avoid mistakes.

RELIABLE AGENCIES WANTED.

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PLEASE
SEND
MONEY
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MANAHAN'S
FRESH AIR LOCK
GIVES PERFECT
VENTILATION and
SAFETY Lets fresh air in
and keeps bur-
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need it on every window. Your
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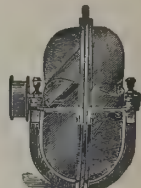
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Art Metal Ceiling

Exclusive and Artistic Designs Appropriate for Any Style of Architecture.

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Patent Metal Shingles.

Crimped and Corrugated Iron.



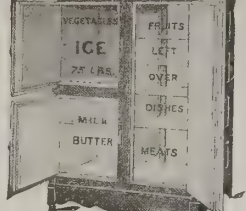
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Architectural Sheet Metal Work, Etc.

The Leonard Cleanable Refrigerators

Freely Acknowledged to Be the Best in the World.

Made in Grand Rapids, Mich., U. S. A.

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Single door, zinc lined.

No. 498—Size, 23x15x37\$4.50

No. 070—Size, 25x17x40..... 7.70

Double door, zinc lined.

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Three doors, lined with real Porcelain on sheet steel.

No. 4—Size, 35x22x46\$22.75

Four doors, lined with real Porcelain.

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Orders received through any exporter in New York, Boston, Philadelphia or Baltimore, or through our own Export Office, 54 Warren Street, New York. E. L. D. Hester, Mgr.

Seven walls to save the ice. Air tight locks. Sliding, adjustable shelves, and many other improvements. Outside cases, ash with quarter-sawed oak panels, dark golden finish. Walls packed with mineral wool.

Our Catalogue, illustrating and describing the various styles of Refrigerators made by us, mailed postpaid to all parts of the world.

These prices F. O. B. New York, Boston, Philadelphia or Baltimore, crated for export. The sizes given are: first, width across the front; second, depth from front to back; third, height. All outside measurements in inches.

GRAND RAPIDS REFRIGERATOR CO., Grand Rapids, Michigan, U. S. A.



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COFFEE EXCHANGE,

NEW YORK.

Hench, Dromgold & Co.

MANUFACTURERS OF

Agricultural Implements & Machinery



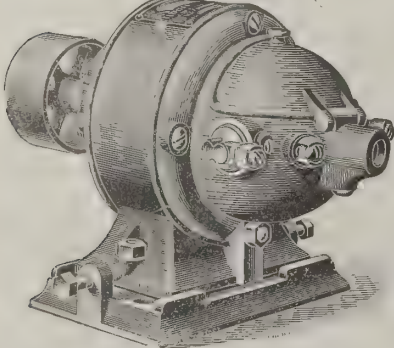


Factory:

YORK, - PENNA.

Cable Address:

"Adverbial," New York



Type "R" Sparking Dynamo for Gas Engines.

The Elbridge Electrical Manufacturing Co.

ELBRIDGE, NEW YORK, U. S. A.

TWO SPECIAL OFFERS FOR EXPORT ONLY.

Type "R" Sparking Dynamo.

PRICE, \$15.50, f. o. b. New York, Boston or Philadelphia.

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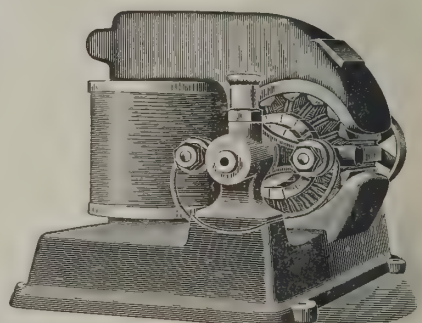
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PRICE, \$26.50, f. o. b. New York.

Output: As a Dynamo, 8 lights or 450 watts; for Electro-plating, 6 volts and 50 amperes; as a Motor it will deliver 1/2 horsepower.

This is a GOOD machine and will give the best of satisfaction. Standard voltage, 110, but can be wound to order for any voltage up to 500 at special prices.

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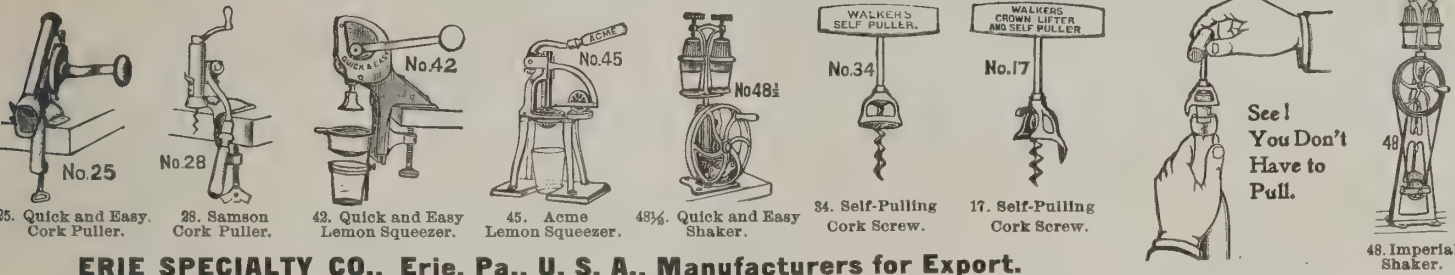


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You Don't
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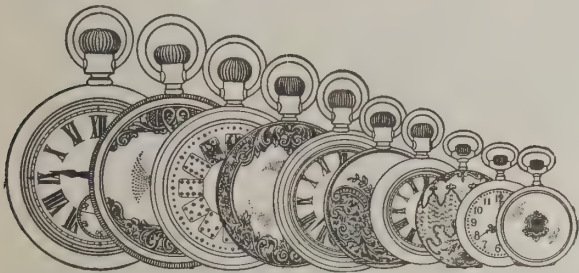
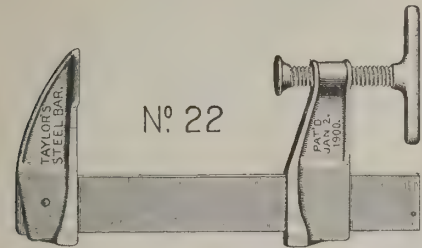
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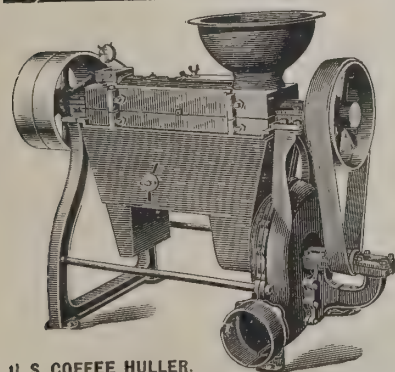
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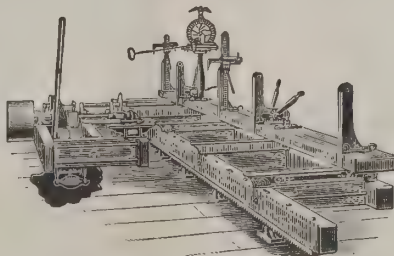
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N. B.—The steel used exclusively in these
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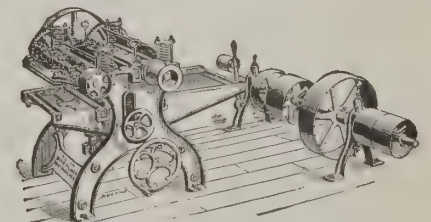
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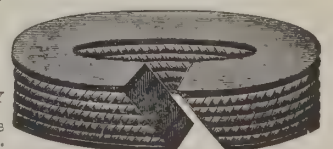
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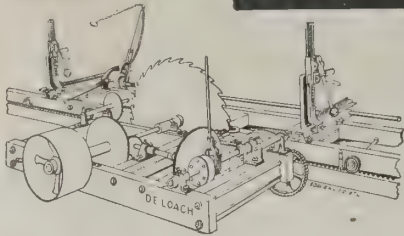
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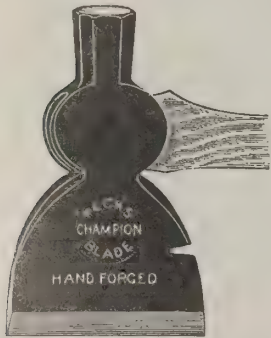
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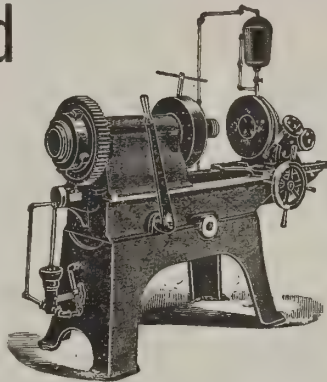
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for a pipe-threading machine, to handle
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Built with a knowledge of what these
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squarely and fully. The machine here
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Over 9000 in Successful Operation.

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1½ H. P. Two-Cycle Marine Engine	\$ 75.00
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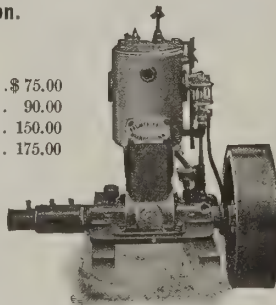
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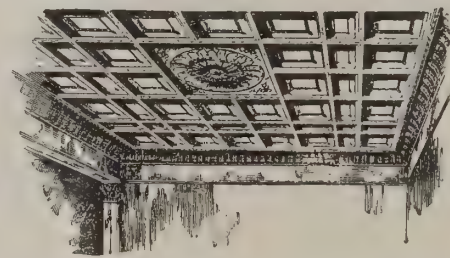
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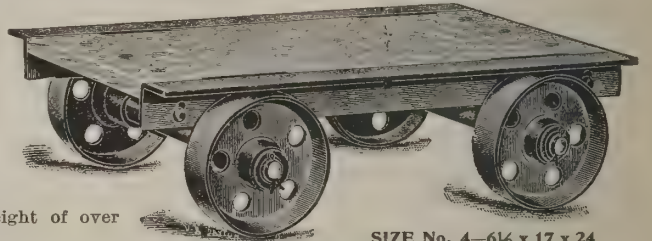


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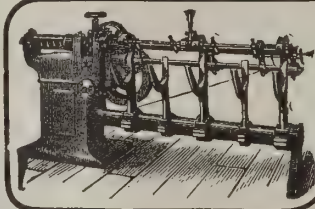
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Straightens and cuts accurately every min-
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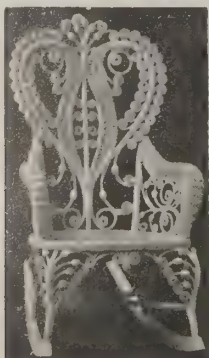
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You can buy to advantage through any American Export House—preferably in New
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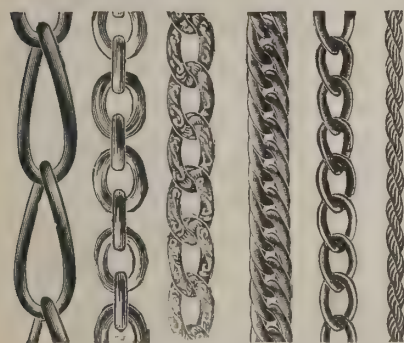
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Fine Rolled-Plate and Seamless Wire Chains, Neck Chains.

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\$ 8.50 a doz. net., f. o. b. New York	9.00	11.00	7.50	7.00	15.00
No. 19.	No. 578.	No. 494.	No. 3 1/4.	No. 260.	No. 235

Fine rolled plate, warranted 6 years.

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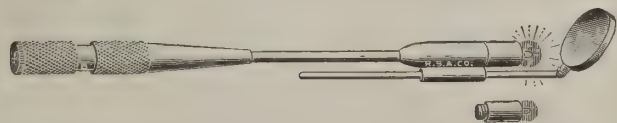
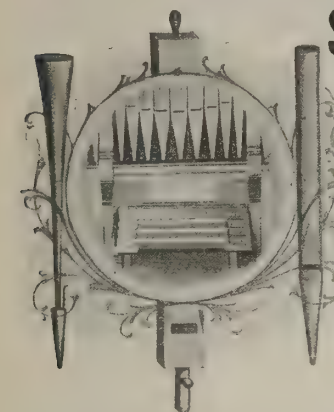
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Thin Elastic Wheels a Specialty.

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Automatic Numbering Machine

Discount, 30 Per Cent. in Lots of 1 Doz.
(Six Wheels) Numbers from 1 to 1,000,000

This machine is **automatic** throughout. It can be set to print numbers consecutively—print a series in duplicate—or repeat any number indefinitely.

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Floor Wax, Powdered Wax, Wax Oil for Kitchen Floors, Surface Renovator and Weighted Polishing Brushes.

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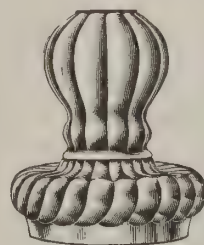
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200 HOURS' LIGHT
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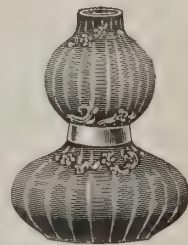
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The only lamp using a glass burner.

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Fiberlite Shade and Holder.

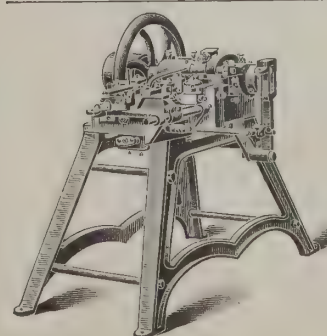
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Wire Nails.

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STEEL and WOUND
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Excelsior Wire and Poultry Supply Co.

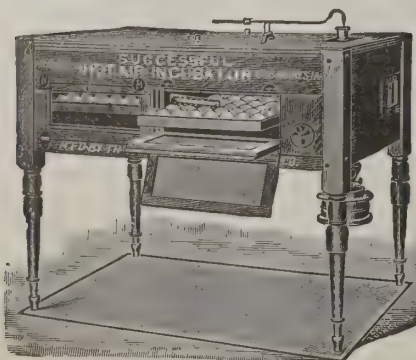
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First of all, get this book. No matter what other makers you write for a catalogue, write us, too. We will send you the best book of all—written by the man who has devoted 22 years in perfecting RACINE HOT-WATER INCUBATORS AND BROODERS. When you learn what he knows you will want his machine, we think. The book is our illustrated catalogue—that is why we send it free. But it is more than a catalogue. It tells all that an incubator should be and why. Write to-day for it. Reliable representatives wanted. Prices quoted for export admit of big profits. Address

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THE BEST THAT SCIENCE
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"SUCCESSFUL"

The **"SUCCESSFUL"** is regarded by those who have made money out of poultry raising as the greatest egg-hatching machine of the day. Heat, moisture and ventilation controlled automatically. Hatches well in the hottest and driest climates of the world. The walls of our machines are built on the refrigerator plan and packed with mineral wool asbestos. Sizes from 54 to 400 eggs. Prices from \$10 to \$37. Both hot-air and hot-water heating systems used. All hot water tanks made of 14-oz. planished copper.

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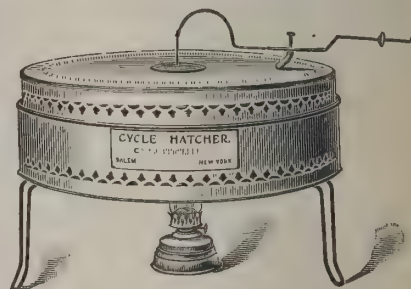
Are low in price, but this does not mean that they are cheaply made, or that they are inferior in any way. In fact, they are high grade in every particular and have several important features not to be found in any other hatcher.

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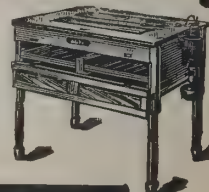
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And we are the only Makers.

Have you seen Albany Grease? How many know its worth?

Cost of using Oil.

Cost of using Albany Grease.

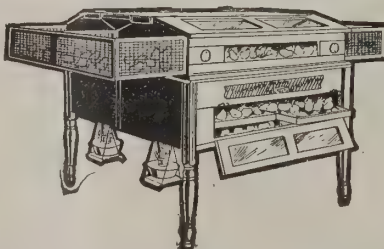


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ADAM COOK'S SONS.

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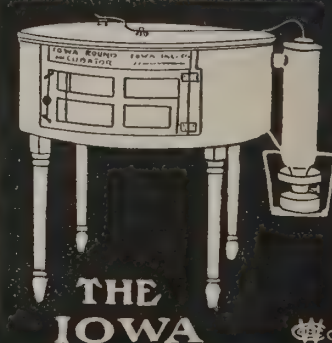
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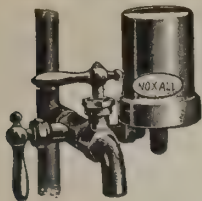
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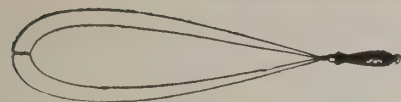
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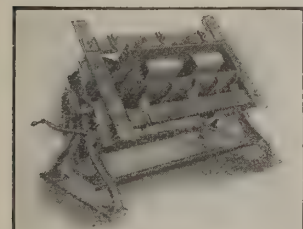
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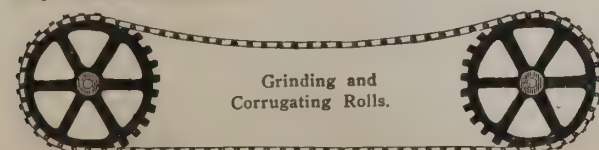
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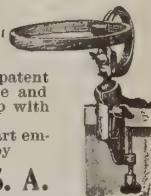
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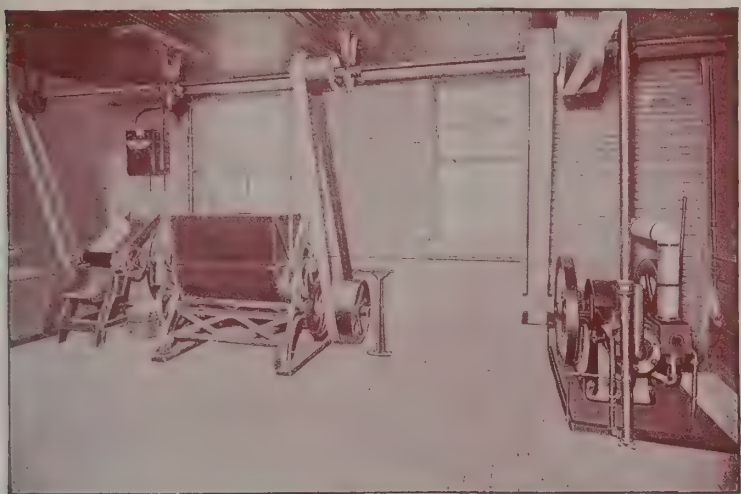
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FIRE-PROOF,
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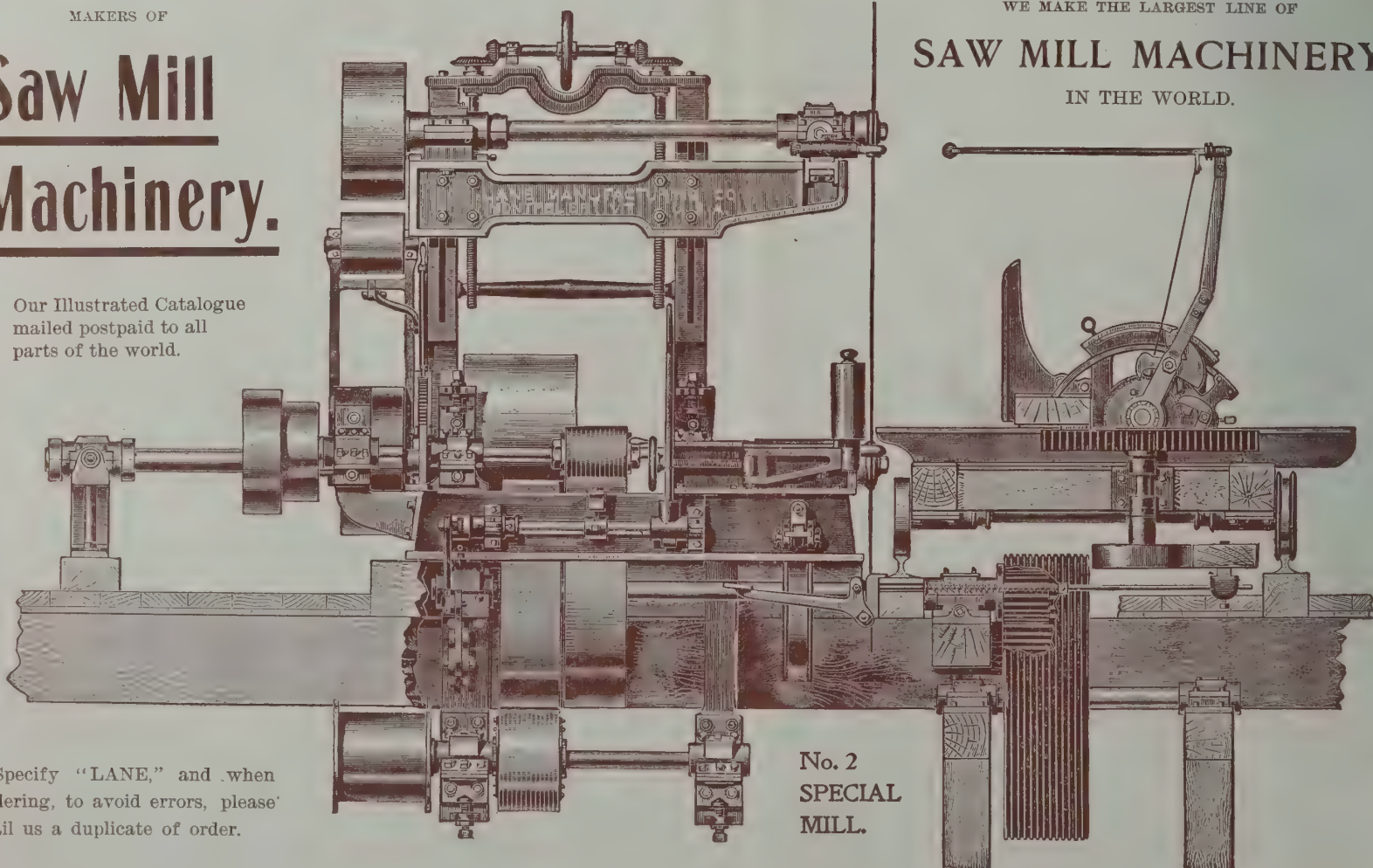
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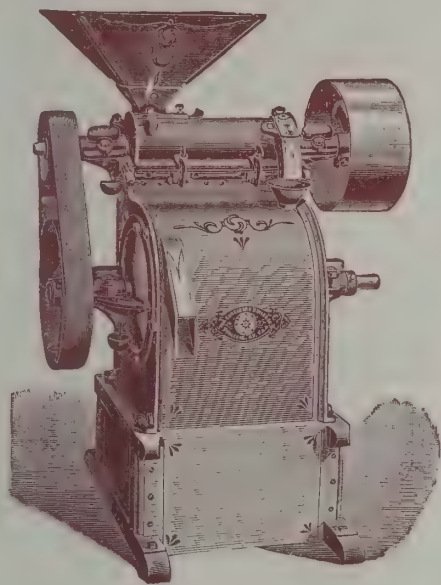
WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIV.

NEW YORK, OCTOBER, 1904.

No. 5.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

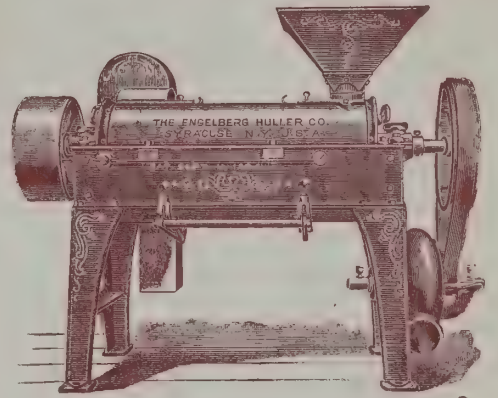


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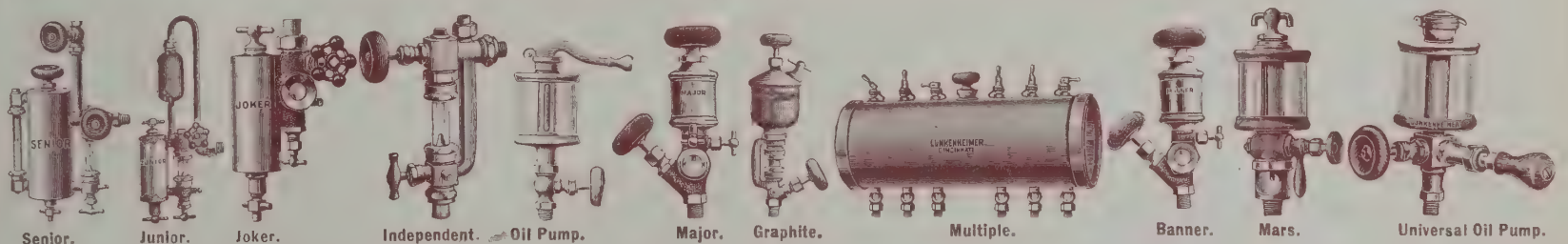
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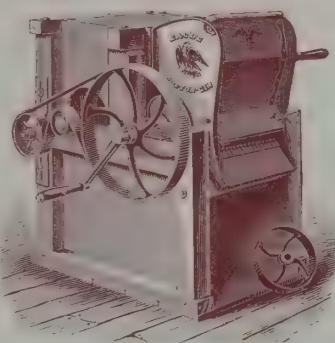
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BRANCHES: New York, Philadelphia, New Orleans, London, Paris.

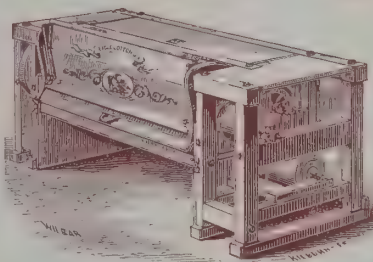


Hand Gin.

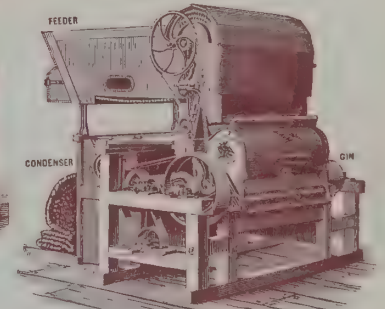
EAGLE COTTON GINS.

These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

For further details illustrated Catalogues will be furnished on application.



Power Gin with 12-inch Saws.



Power Gin with 10-inch Saws, with Feeder and Condenser.

CONTINENTAL GIN CO., Inc., BRIDGEWATER, MASS., U. S. A.

Successors to EAGLE COTTON GIN CO.,

Hartshorn's Shade Rollers.

A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

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OF
IMITATIONS



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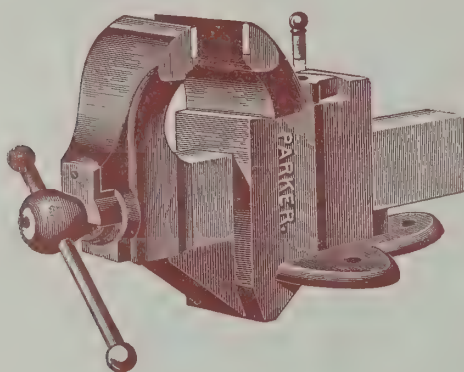
Sold All Over the World. Order through your Commission Men.

STEWART HARTSHORN CO.

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Stockroom: No. 7 Lafayette Place, New York.



THE
Parker Vise

Unequaled for
Strength, Durability
and Finish.

Has stood the test of over
50 YEARS.

EVERY VISE MADE FOR
SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP
USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over 60 YEARS and will stand comparison with any
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We manufacture a line of

Hardware, Vises, Wood Screws,
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Lamps and Chandeliers,
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DIETZ VICTOR LANTERN.

A lantern which has won
its way to the top purely on
its merits.

We claim for it the
largest number of sales
of any lantern on earth.
It represents the acme
of lantern perfection,
possessing the three quali-
ties that go to make up
a perfect lantern,

Reliability,
Durability and
Simplicity.

It is used extensively
throughout the earth,
from the icy fields of
Northern Canada to the
heated deserts of Africa.

It can be lighted,
trimmed and regulated
without removing the
globe, and is fitted with
the best Burner made
($\frac{3}{8}$ in.) and a high-grade
No. O Globe.

We also manufacture
the most complete line
of

Outdoor
Lamps and Lanterns,
for every
conceivable purpose.

We issue a complete
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and English), with price-
list and discounts, and
will send same on re-
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showing cost, laid down
in your port, of 1 gross
or more of the Victor or
any other lantern you
may select in our cata-
logue.

R. E. DIETZ
COMPANY,

60 Laight St, NEW YORK, U. S. A. Established 1840



ARCADE MANUFACTURING CO.

(INCORPORATED 1885).

MANUFACTURERS OF

"PHOENIX" Cork Pullers,

"Champion" and "Handy" Cork Pullers.

ALSO

"PERFECT" LEMON SQUEEZERS

AND THE

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COFFEE MILLS.



"Phoenix" Cork Puller No. 30,
Without Bottle Holder.

NEAT, SIMPLE, COMPACT.

"So simple any one can
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Can be fastened to Bar, Shelf,
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No. 30.—Especially adapted for fam-
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ready for steamer, F. O. B. cars
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Size of box, 12x14x30 inches. Weight:
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Hardware Specialty Mfrs., FREEPORT, ILLINOIS, U. S. A.



"Phoenix" Cork Puller No. 60
With Bottle Holder.

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Manufacturers of **HIGH-GRADE DESKS** OFFICE HOME **FOR EXPORT.**

ESTABLISHED 1880.

ESTABLISHED 1880.



OUR NEW ROLL-TOP DESK.

No. 516.

PRICE, \$170.00

Our 100-Page Catalogue, illustrating and describing the many styles of **DESKS** made by us, mailed post-paid to all parts of the world.

Send for **Net Export Prices**, which include boxing and delivery F. O. B. New York.

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Full Keyboard of 85
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allows types to print direct
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preserves alignment per-
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SWIFT, QUIET,
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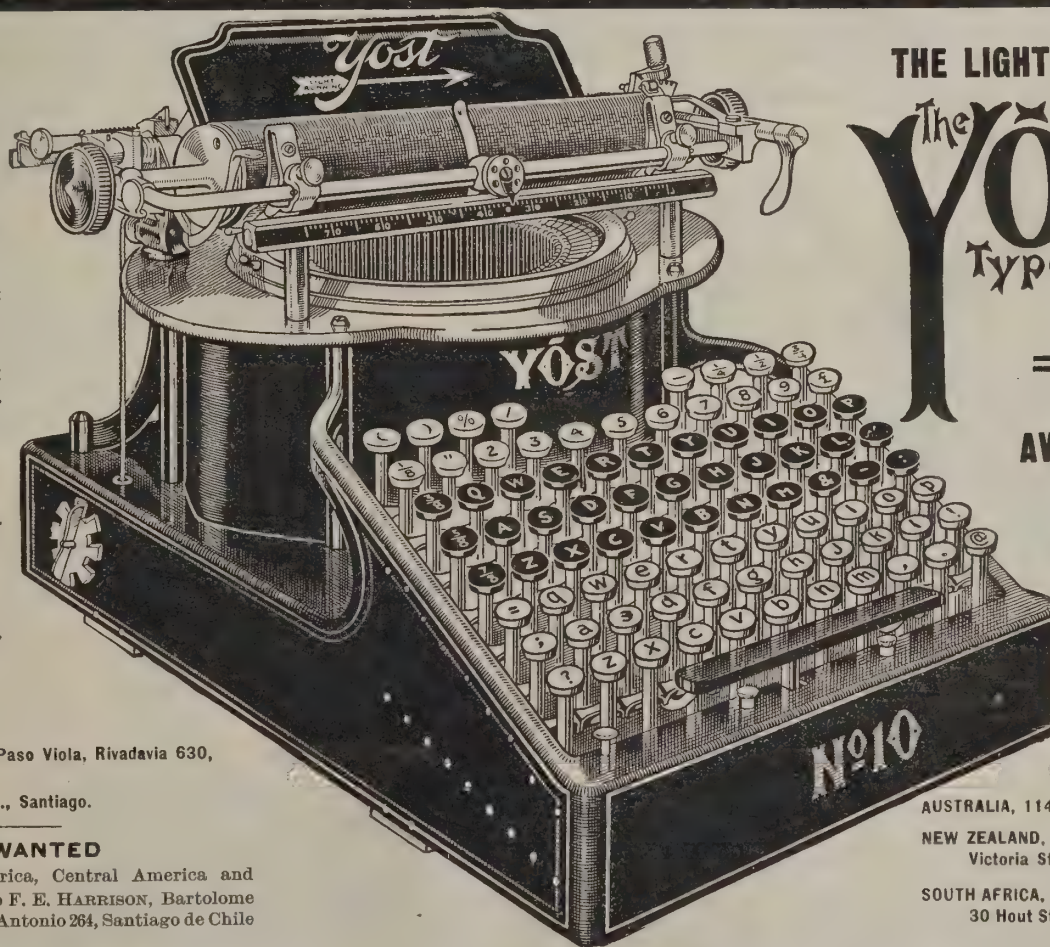
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In other States of South America, Central America and
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Best dressing put up and warranted in all respects.



Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

For polishing patent leather shoes quickly and without injury to the leather.



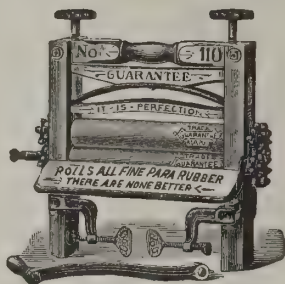
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Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS RAT and MOUSE TRAPS.



Send for
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Prices.



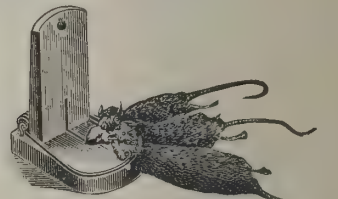
We make a full line of
CLOTHES WRINGERS
for the Export Trade



Delusion
Mouse Trap.



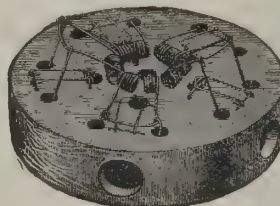
Rex Trap.
Made in two sizes:
large size for rats;
small size for mice.



Erie Rat Trap.

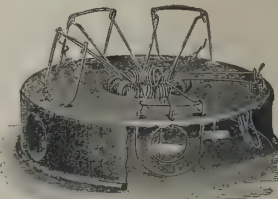
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Requires no setting. **RAT TRAPS**—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch," "MOUSE TRAPS."—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker," "Easy Setting Wood Choker," "Cyclone," "Yankee," "Rex" and "Sure Catch."



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Lovell's Easy-Setting Metallic Mouse Trap.

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American Novelties

NOVELTY (SELF-CLOSING)
INKSTAND No. 1 (large),
retail, - **75 Cents**

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All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of Sydney, Melbourne, Adelaide, Barcelona and Paris, for novelty, workmanship, finish, simplicity, utility and cheapness.

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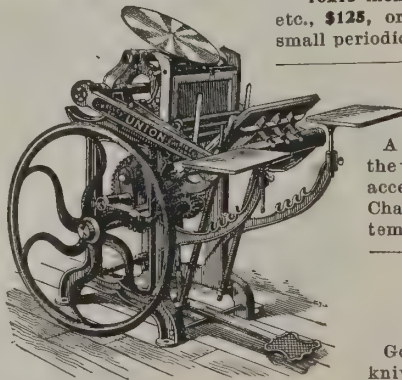
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Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **\$40.00.**

10x15-inch Press, with 10 styles of type, ink, etc., **\$125**, or with more type, rules, etc., for small periodical, **\$200.**

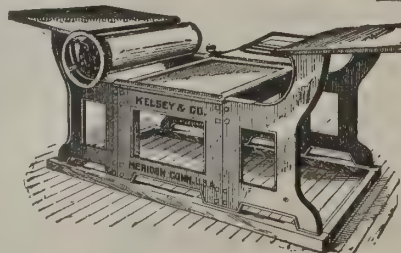


PRESS UNION.

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, **\$200.** Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., **\$400**, outfit included.

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Good hand machine with 24-inch steel knives, **\$12.00.**



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For newspaper and large announcements. Bed, 29x43 inches. Price, **\$500.** Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

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CONTINENTAL CAR AND EQUIPMENT CO.

FOREIGN DEPARTMENT:

Whitehall Building, Battery Place, New York, U. S. A.

Cable Address: "CONEQUICO," New York.

MANUFACTURERS OF

Railway Freight, Plantation, Industrial and Mining Cars.

We also make Special Cars for all purposes, from designs furnished, or will furnish our own designs upon request

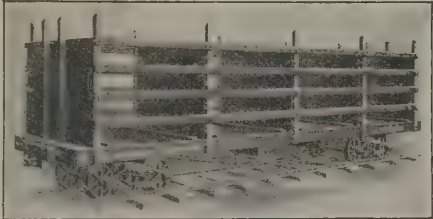
FOR FOREIGN MARKETS.—Our Cars are taken apart and packed for shipment according to the best known methods.

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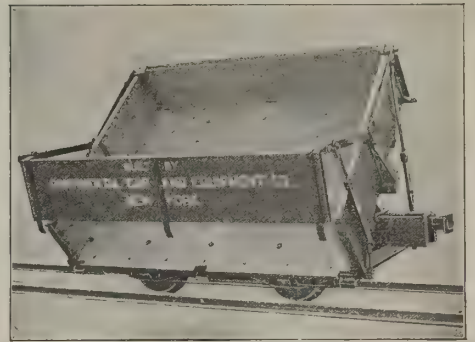
Please mention THE AMERICAN EXPORTER.



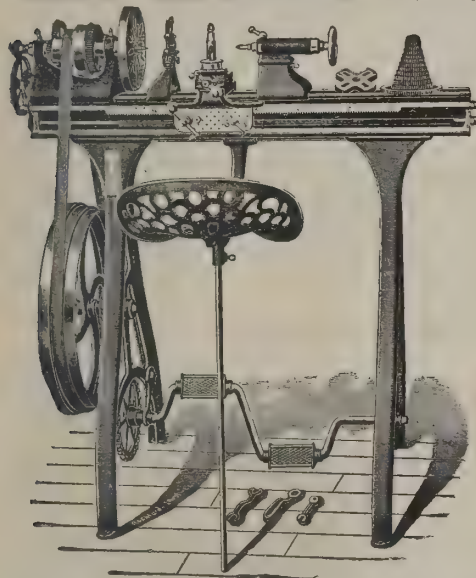
ALL-STEEL FLAT CAR.



CUBAN CANE CAR.



This cut shows our modern Dumping Car. It dumps on both sides of the track and is built strongly for hauling and dumping dirt, rock, sand, clay, ore, etc. Built in all capacities from 1 to 5 cubic metres.



Barnes' Patent Foot, Hand and Steam Power Machinery

FOR WOOD AND METAL WORK.

SCROLL SAWS, CIRCULAR SAWS, LATHES, MORTISERS, TENONERS, GRINDING MACHINES, DRILLING MACHINES, ETC.

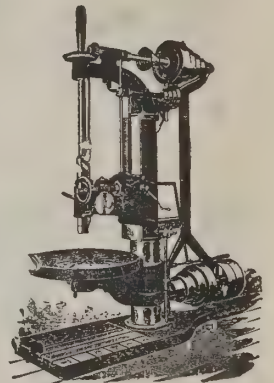
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MONROE PORCELAIN REFRIGERATORS.

THE MONROE IS A HIGH-GRADE REFRIGERATOR, BUILT FOR THE HOUSEHOLD.

Each food compartment is moulded in one solid piece of porcelain. The corners are rounded. There are no joints or crevices for the food to decay in.

The porcelain is white, durable, and as easily cleaned as a china dish. The ideal house refrigerator, absolutely sanitary. The prices here quoted for foreign markets only (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

MONROE No. 21, Style D, Solid Porcelain Inside, \$54.00

Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.

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All sizes carried in stock ready for immediate shipment. Special sizes built to order.

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Specify "MONROE."

Monroe Refrigerator No. 21. Style D.

Monroe Refrigerator No. 30. Style E.

MONROE REFRIGERATOR CO., Patentee and Manufacturer, **LOCKLAND, OHIO, U. S. A.**

CELLULOID ADVERTISING NOVELTIES, SIGNS, BUTTONS, MEDALLIONS, BADGES &c.

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CATALOGUE, ESTIMATES AND SPECIAL DESIGNS ON APPLICATION.

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BALTIMORE BADGE & NOVELTY COMPANY,

BALTIMORE, MD., U.S.A.

GOODS WELL DISPLAYED IS HALF THE BATTLE WON!!!

GRAND RAPIDS FIXTURES CO., MANUFACTURERS OF K.-D. (KNOCK-DOWN) SHOW CASES FOR EXPORT.

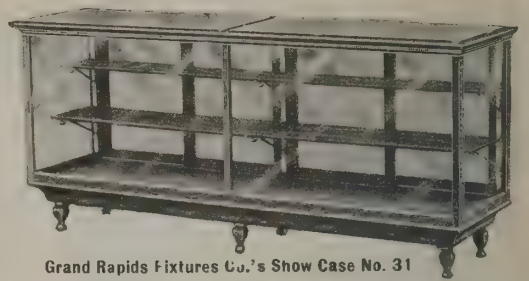
SHOW CASE No. 31 is Our Leader for Foreign Markets, and is just the thing for displaying Furnishing Goods' Chemists' Sundries, Dry Goods; in fact, is well adapted for the display of any line of goods.

SHOW CASE No. 31, "set up" (ready for use), is 8 feet long, 42 inches high, and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength. A sheet glass in front, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with two wooden shelves, 10 and 14 inches in width on nickel plated, adjustable shelf brackets.

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Grand Rapids Fixtures Co.'s Show Case No. 31

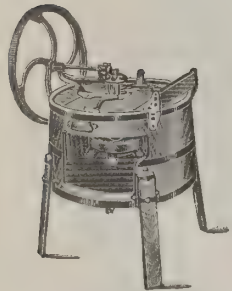
GRAND RAPIDS FIXTURES CO., GRAND RAPIDS, MICH., U. S. A.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."

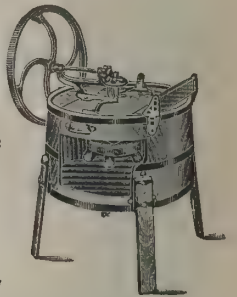
THE Guarantee FOUR-STROKE ROTARY Washing Machine

Just placed upon the foreign and home markets, combines the Latest Improvements in High-Speed, Ball-Bearing Washing Machines and will accomplish all that is claimed for or required of any washing machine, and more.

NOT A SPECULATION, BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.



GUARANTEE WASHER.



GUARANTEE WASHER.

FOR TWENTY DOLLARS in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines.** (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds. Order **FOUR NOW.** Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States. NOTE.—When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.

OCEAN WAVE WASHERS

Wash the clothes as easily and cleanly as sea waves wash the beach.

OVER 100,000 NOW IN USE.

Shipping weight, 85 lbs.

Size, 2 x 2 x 3—12 cubic feet.

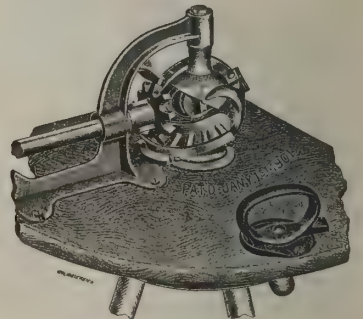
SPECIAL FEATURES.

Our Gearing: Simple in construction; impossible to throw out of gear; the longer it is used the easier it will run. Our Fly Wheel has no threads to strip; no nuts to lose, being attached or detached in a moment's time. Our Improved Dasher is hand-turned; clothes do not cling to it and tear. We assure free action of dasher by using heavy galvanized flanged ring in dasher block, thereby relieving all friction. In general construction of tub and finish, only best materials are used. We ship through any responsible New York exporter. All orders must be sent to us direct.

VOSS BROS. MFG. CO.,
DAVENPORT, IOWA, U. S. A.



ONCE SOLD, THEY NEVER COME BACK.



THERE IS NO FRICTION.
NO LOST MOTION.

THE GENUINE

"O-K" WASHER.

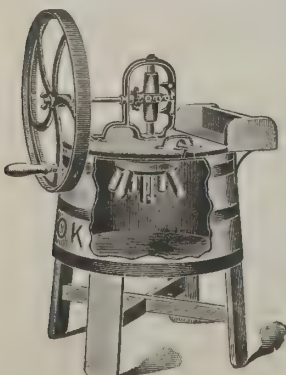
KNOWN AND IN USE THROUGHOUT THE CIVILIZED WORLD.

The O. K. is the KING of ROTARY WASHING MACHINES! Because:

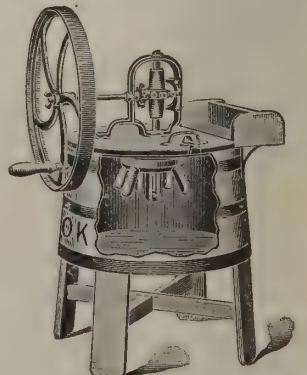
1. The O. K. is the only Rotary Washer that has **Revolving Steel Ball Gearing**, reducing the friction and thus making the machine so **light running** and **almost noiseless**.
 2. The tub is made of **Louisiana Red Cypress** lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside of the tub, as are all of the castings.
 3. The wheel turns right or left, **pin-wheel or dasher reverses automatically**, turning the clothes back and forth through the hot soap-suds, and cleaning them without rubbing them to pieces.
 4. The O. K. Washer is made by experienced mechanics, and will outlast any other washer on the market.
 5. The tub has a wringer box, fastened with steel brackets.
 6. The lid on tub closes tight, no escape of steam.
 7. Has glided hoops, castings and name.
- Prices quoted F. O. B. New York. Each **O. K. Washing Machine**, crated, ready for transportation abroad, weighs about ninety (90) pounds, and occupies nine (9) cubic feet.

Manufactured Exclusively by

H. F. BRAMMER MFG. CO.,
DAVENPORT, IOWA, U. S. A.



O. K. WASHER.



O. K. WASHER.

THOMAS K. OBER & CO. (INC.)

832 DREXEL

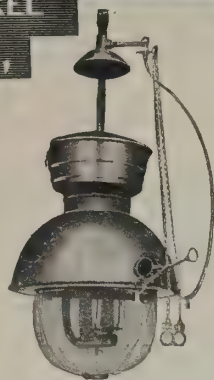
BUILDING,

Sole Export Agents of the Kitson Hydro-Carbon Heating and Incandescent Lighting Co.

PHILADELPHIA,

PA., U.S.A.

No. 190x.
Outside Lamp;
outfit with
tank;
2,000 candle-
power;
30 inches.



What helps to sell goods?
What advertises your place of business?
WHAT BRINGS TRADE?
What makes the home more inviting?

LIGHT.

Use Keros Incandescent Oil Lamps

in your shop and they will pay for themselves in a month in increased trade. Most economical light in the world. Burns 90 per cent. of air to 10 per cent. of vaporized oil.

One Gallon of Kerosene Oil Gives a 1,000-Candle-Power Light for Twenty-five Hours.
Perfectly Safe. Does Not Increase the Insurance.

Send for Illustrated Catalogue and Price-List, giving full information.
See June number of this Journal for illustrations of various styles.



No. 501.
Bracket Lamp; outfit with
tank; 1,000 candle-power;
15 inches.

BALKE MANUFACTURING CO.,

INCORPORATED \$100,000.

Patentees and Manufacturers of
Balke Combination Davenport, Billiard and Pool Tables,
and Standard Tables.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note—The prices here quoted, U. S. Gold or its equivalent, are for Foreign Markets Only, and include boxing ready for steamer, delivered f. o. b. cars at New York City.

Style "C," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

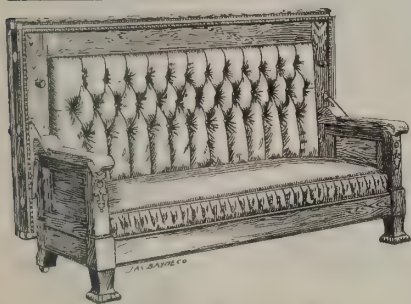
Style "C," converted into a Billiard or Pool Table, has a playing surface of 3½x7 feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, \$95.00. Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: 4'x8'x6'; 32"x36"x6'.

Standard Billiard Tables.

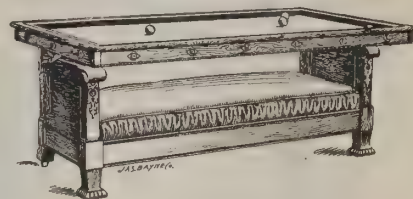
"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate; imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4x8 feet. Price complete, \$125.00. Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: 4'2"x8'2"x8'; 4'x8'2"x2'.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, 3½x7 feet. Price complete, \$90.00. Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: 4'x8'x8'; 3'6"x6'x2'.

Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order.



Style "C," as a Davenport.



Style "C," converted into a Billiard Table.



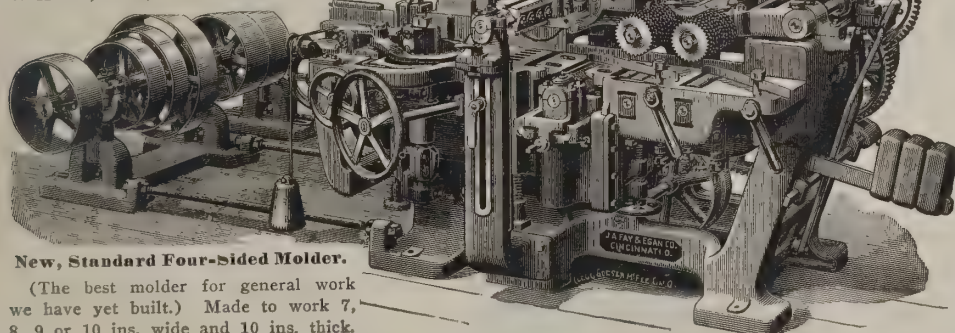
"Benedict" Special Billiard Table.



"Den" Special Billiard Table.

New Catalogue, book on Band Saws and book on Sanding Machines sent free on receipt of postal. Send it now.

"Grand Prix" and Decoration Legion of Honor, Paris, 1900.



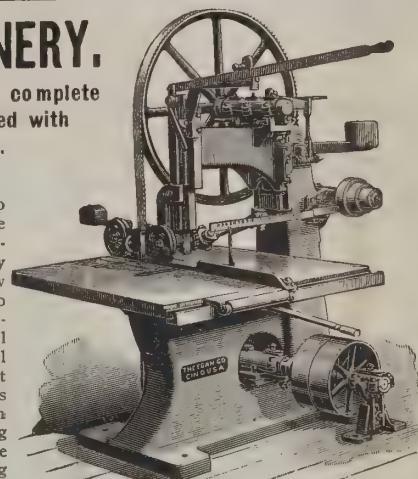
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No. 3—2.03; " 4½ " "

Combination sample order, one of each size, \$7.00.

All prices spot cash, f. o. b. N. Y. City.

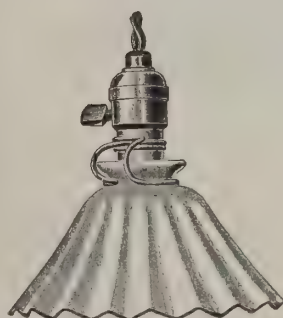
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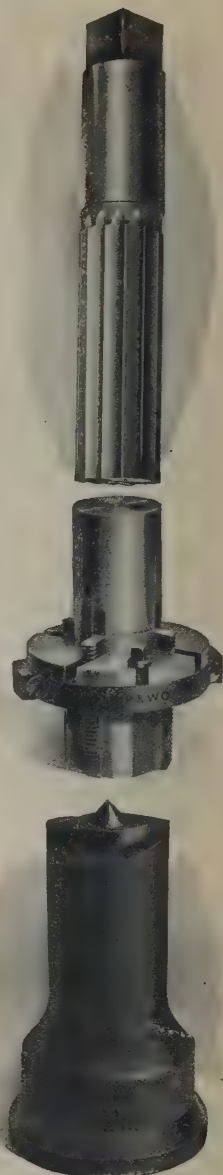
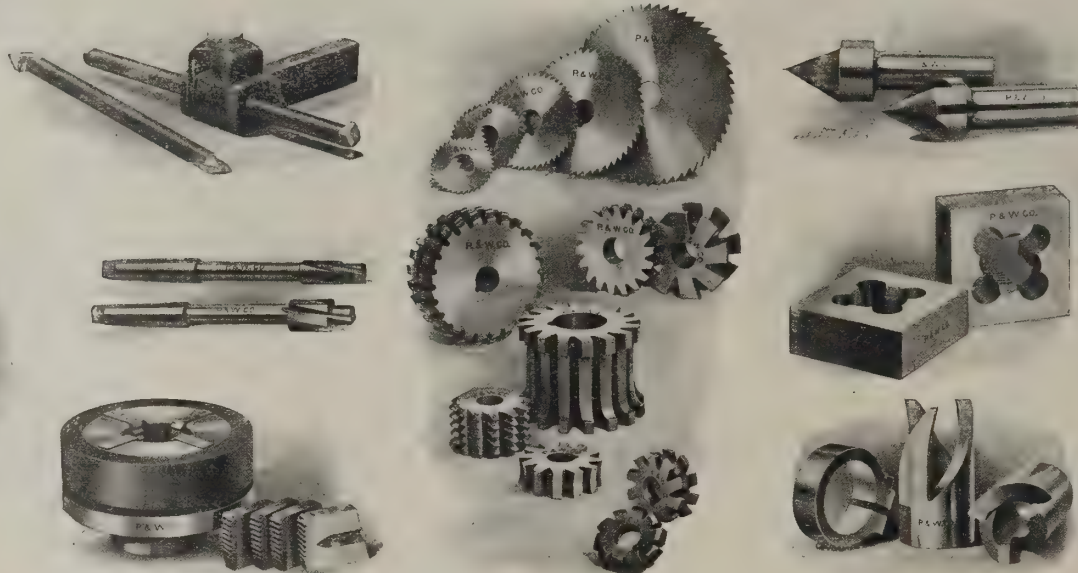
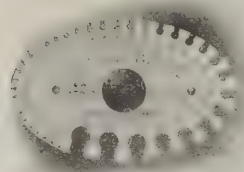
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White Lily Washer.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

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THE AMERICAN MAIL AND EXPORT JOURNAL.

[Founded by HOWARD LOCKWOOD & Co., 1877.]

THE JOHN C. COCHRAN COMPANY, - - - Publishers
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FOR UNIVERSAL PEACE.

MORE than ordinary interest attached to the twelfth annual conference of the Inter-Parliamentary Union held in the World's Fair city of St. Louis last month. From Europe there came more than two hundred legislators who are interested in the pacification of the entire earth. There was also a peculiar fitness in holding the sessions in the Exposition city, for there could be seen the great results accomplished in upbuilding a territory acquired by the United States by peaceful purchase and not by armed conquest.

The delegates commented with much favor upon the refusal of the President of the United States to act as arbitrator in the recent Venezuelan dispute and commended him for suggesting that the claims against Venezuela be referred to The Hague tribunal for adjustment. It was brought out in the course of the proceedings that more than two hundred cases have occurred within the last century in which international difficulties have been settled by arbitration in one form or another. In these disputes the United States was a party to about seventy of those adjusted by arbitration.

Naturally the war in the Far East was a subject for discussion, and the delegates united in deploring the enormous loss of life and the injury done to the world's progress by the martial conflict now going on between Russia and Japan. In this view of the war the delegates certainly voiced a sentiment against wars generally which is becoming stronger and greater everywhere every year. Aside from the waste of life and property involved for those directly concerned, much suffering accrues to non-combatants and there are indirect losses to persons who have no direct interest in the conflict. Besides all this, war is opposed to civilization's progress, and is injurious to international trade and commerce. More power, therefore, to the good work which is being done by the Inter-Parliamentary Union.

AUTOMOBILES of American manufacture are now being shipped to almost every country on the globe. Great improvements have been made in this line of industry through the tireless energy and skill of American mechanics and the results of their endeavors are being found in increased sales not only at home but in the foreign markets where, until within a comparatively short time, the American automobile was looked upon as a curiosity. Our readers can better appreciate the growth of this branch of our export trade when we say that the value of automobiles exported in the last fiscal year amounted to \$1,895,605, being just double the amount exported two years ago. Not only have our mechanics made wonderful improvements, but our manufacturers have given a decided impetus to the foreign trade.

SMALL PROFIT, LARGE SALES.

MERCHANTS abroad are interested in the *fact* that our exports are greater than ever before only because it gives evidence to them that previous purchasers of our manufactured articles, particularly agricultural machinery, have found our goods durable, suitable for the purposes intended and reasonable in price. If American merchants did not give good value to their customers abroad they would lose trade, instead of reaping the rewards of the increase which has been so noticeable within this calendar year. Regular readers of THE AMERICAN EXPORTER are fully posted regarding the policy of American exporters, but new readers are added every month to our list and some of these may wonder why the demand for our products gathers what may almost be called geometrical headway. To our new readers we give the assurance, which the older ones have long since verified, that the American manufacturer is more satisfied with large sales and small profits than he is with the reverse. Experience has taught him that he can produce better results by selling 100 articles at a profit of say \$5 each than by selling five articles at a profit of \$100 each. In the first instance, the article comes into more general use, people see it, want it and buy it, increasing the demand and enabling the mechanics to work out new ideas in the way of improvement in which they would be hampered if they had only five machines to make at a time instead of one hundred.

The old saw that "practice makes perfect" applies to Americans as well as to everybody else. They get the practice in the carrying out of the American principle of "small profits and greater sales." Our machines are always trying to improve upon what their predecessors have done. Occasionally one may discover and perfect an innovation, but all the time hundreds of others are finding ways and means to perfect the smaller details of the work upon which they are engaged. A slight change in gear, perhaps not noticeable to anybody but an expert, some new way of placing bracing or some other apparently trifling alteration in previously accepted methods may improve the value of the machine, perhaps cheapen its cost of production, while all the time its usefulness is added to. This spirit of advancement, of unselfishness, of endeavoring to uplift the world generally, that permeates all true Americans, brings about the interesting disclosures made in the recent report of the American Department of Commerce. We never like to make comparisons, but the figures are official and they give facts that are of interest to everybody in the commercial universe. The report shows that four chief exporting countries, as from 1880 to 1903, have increased their "exports of domestic manufactures" as follows: The United Kingdom, 18.46 per cent.; the United States, 339.85 per cent.; Germany, 69.66 per cent.; France, 19.64 per cent.

This showing is certainly wonderful. We would scarcely believe it ourselves if it were not based upon official statistics. The figures in detail are given on another page. We do not usually print statistics, but some of our foreign readers will undoubtedly wish to know more about the matter than what we wish to say in this portion of the paper. Not for a long time has there been a better opportunity to verify the adage regarding "cause and effect," nor has there been a better illustration of the practical utility of the American principle of "large sales and small profits" which within the last few years has been the motto of all American exporters who are fortunate enough to have the indorsement which goes with the publication of their announcements in THE AMERICAN EXPORTER.

ECONOMY of operation, a strict attention to details, persistent effort to excel and honesty of purpose are among the reasons which have given such great impetus to the trade abroad in American manufactured articles, especially agricultural implements and machinery of all descriptions.

MANUFACTURERS of agricultural implements in this country have recently placed large orders for steel on account of the increased demand for their products.

MACHINERY DAY at the American World's Fair last month was a complete and notable success. We have described the attractions in previous issues of THE AMERICAN EXPORTER.

MET WITH HEARTY WELCOME.

SEPTEMBER and the World's Fair at St Louis brought to America thousands of foreign visitors—most of them distinguished men in their spheres of life and all of them notable in one way or another. There has not been such an influx of men of the kind from other lands in many years—in fact, not since the Columbian Exposition at Chicago—and the gateway of New York saw in September alone a far greater number of these men than crossed the ocean to visit the Chicago Fair during all the months that it was a world attraction.

Columns could be written about our distinguished visitors. They are the bright men of nearly every important field of industry and endeavor everywhere on the face of the globe. They came to America to learn the latest and most improved methods as applied to the subjects in which they are interested. The St. Louis World's Fair, with its wonderful attractions, interested them greatly. New ideas occurred to many and new ways of applying old principles no doubt occurred to others. The men who are high in industrial manufacture, in fact, in any sort of mechanical or other progressive effort, are generally deep students. They find that the longer a man lives, if he is of the go-ahead kind, the more he has to learn. The day of the man who knows it all has long since been relegated to the dismal past. There is no room for such a man anywhere in these days of progress.

We were greatly pleased to note the interest with which our visitors viewed all things American. They gathered impressions of our greatness that cannot fail to be of importance in the extension of international trade trans-oceanic commerce. Many learned men among our visitors were astonished to realize the progress which has been made in every way in this country even since the Chicago Exposition. The impressions which they will take home will be no less valuable to this country, than they will be to the welfare of the world at large. The St. Louis Exposition has unquestionably exercised a world-wide influence for advancement of industrial, commercial and artistic education.

WOMEN IN TRADE.

ONE feature of American progress which may seem amazing to some of our foreign readers will nevertheless prove of more than passing interest to them. It is the introduction of women into business life and the advancement which some of them have made in fields that were formerly occupied exclusively by men. It is now not uncommon in America for women to be admitted to the bar as lawyers and in the medical profession women are graduated as physicians with a frequency that now no longer causes astonishment. Even in religion, there are now two denominations, the Unitarian and the Universalist, which ordain women as preachers. But it is in trade that women have lately attracted more attention than in the learned professions.

Progressive, ambitious, energetic and masterful, women have worked their way ahead in many important business houses, until they have gained the ascendancy. One of the largest chemical works in the world is managed by an American woman, whose executive ability and grasp of the affairs of business is certainly wonderful. In other cases the same degree of success has been achieved by women who have had the courage and the inherent gift of "knowing how" to do things. The American business woman is seldom handsome of face, she is of the retiring type and believes in attending to her duties with the same fidelity and energy that characterizes the course of the successful man in trade. She expects no favors or extra courtesies on account of her sex, and, taken altogether, she looks upon business life from the same point of view that the man does.

The old belief that women did not possess the ability to do men's work is rapidly passing away. The woman in business is a success only if she has the proper temperament, the necessary ability and the brains to do what is necessary. She must be able to excel man in the same line or she cannot go to the top. There are many notable examples of women's success and there will doubtless be many more of them in the near future, for the world of opportunity is daily opening more portals through which women with business brains may pass onward to success.

POLITICS AND TRADE.

OUR foreign readers care mighty little as to who is the President of the United States. THE AMERICAN EXPORTER is not a political paper and ordinarily nothing of a political nature would be allowed to appear in its columns on the subject, but there does seem to be something of more than passing interest in the phases of the Presidential campaign which is now in full progress and which will be decided early in November. These Presidential campaigns come once in four years and until this time have had a serious disturbing effect upon domestic trade and incidentally upon foreign commerce. Merchants, manufacturers and exporters of divided political opinions have hesitated to go ahead with new projects, or to materially increase their business, until they found out whether the "Democrats" or the "Republicans" would win at the polls. We have the "Prohibition" party, the "Socialist-Labor" party, the "Populist" and other parties, but somehow or another either the "Democrats" or the "Republicans" win.

This year both of the chief parties have put in nomination candidates for President who are of such a high degree of ability and availability that the expected depression has amounted to practically nothing. Our manufacturers and merchants feel that it will make no difference to them whether President Roosevelt or Judge Parker is elected. President Roosevelt has been tried in the position and Judge Parker has had extended service in public life and is of the temperament that would make him a good President. The entire country feels safe in the selection of either man. Of course, our American readers have a well-defined idea of the outcome, but we are not writing for *their* information, nor will we make any prediction as to the result.

Speaking of result, we are brought to the point which is of real interest to our foreign readers. No matter who is elected President, the policy of the United States during the next four years will continue to be friendly to all of the other countries on earth; renewed efforts will be made to establish and increase commerce, and in legislation, efforts will be continued to equalize unnatural conditions, while the principle of being fair and honest will be a lighthouse for our law-makers. Americans are not exclusive, nor are they hoggish, if we may be permitted to use such a vulgar but expressive word, yet they are enterprising and progressive. Whether they be manufacturers or ordinary workers the feeling is in their minds, and shows itself in everything that most of them do, that they desire to excel in whatever they undertake to do. Of course, there are exceptions, but the exceptions in America more than prove the rule—for they are so few.

For the next four years we predict that the United States will enjoy in increased ratio the remarkable prosperity which it has been its good fortune to have within recent years and the advances that will be made in trade methods, the improvements that will come from the activity of American inventive minds and the increased efficiency and superior durability of our manufactured products, cannot fail to tend to the advantage of our readers in other countries.

IT may not be many years before American farm implement makers will be confronted by a new proposition, according to information which we have received. The excellence of our agricultural implements has attracted so much attention in one country, Russia, that some of the progressive men are thinking about establishing a plant to manufacture duplicates of our products, buying American machinery for the purpose and using American workmen to produce the goods. No greater tribute could be given to the worth of our agricultural implements, but it will be some time before anybody can buy these durable and useful articles to better advantage than they can in America—if, indeed, the time should ever come.

WATER curtains, as a means of protection against fire in theaters, were mentioned in a recent issue and we have received numerous inquiries on the subject. The water curtain was fully described in THE AMERICAN EXPORTER for June. The idea is not patented and there is nothing to prevent anybody from following the suggestions made in the article.

AMERICAN FAIRNESS.

AMERICA was brought into the Far East trouble in a new way last month. For the moment some of our newspaper friends foresaw international complications and all sorts of unpleasant consequences. The Russian transport *Lena*, badly in need of repairs, called at the American port of San Francisco, on the Pacific Coast, for the purpose of getting into condition to resume her functions as a part of the military and naval establishment of Russia. The motive of the commander of the transport was plainly to test the American enforcement of the neutrality laws, and he found that the United States was disposed to be fair to both sides, without extending unusual privileges to either; and carefully refraining from taking any steps which would violate the position so carefully followed by our Government of not even seeming to take sides in the controversy.

When the time comes to arbitrate for or negotiate terms of peace the United States authorities will be found ready and willing to do all they can to aid in effecting a settlement for peace upon a fair and proper basis. Our officials, however, will not intrude, nor will they do anything that does not promise to be for the best interests of both contending Powers—as well as for the future maintenance of universal peace and the increase of international prosperity.

Some merchants benefit by wars, but the majority suffer, and armed conflicts between great nations always leave behind great trails of loss of human life—as well as money—so that no believer in progress likes to see the results which inevitably flow from disputes of this sort. It is probable that the war between Japan and Russia will be the last in which any great Powers will figure for many years, if not the last war of the kind that will be recorded in history. Civilization is making rapid strides and the Japan-Russian war has shown the futility of resorting to such methods to settle disputes between nations. A victory to either side will be fraught with much greater loss than would have been involved in an adjustment of the matter by arbitration.

FURNITURE EXPORTS.

AMERICAN furniture in the export trade shows a steady and gratifying increase from year to year, although this branch of our foreign trade does not exhibit the phenomenal growth which is found in some other lines. Last year the total exports were \$4,555,411, a gain of \$101,000 over the previous year and a gain of \$430,000 over the year before that. Nearly half a million dollars of increase in three years is not to be despised. Our furniture manufacturers have much to contend with in satisfying purchasers in other countries, for the question of climate enters into the durability of furniture to a considerable degree. Our manufacturers, we believe, have been taking up this matter in a way that will soon greatly add to the foreign demand for American furniture. The furniture exports from the United States to British North America, where climatic conditions are less unfavorable than in some other portions of the world, have just about doubled in four years. Outside of the United Kingdom and Germany a generally increased demand is shown in Europe for our furniture. In desks, it is now generally conceded abroad that American manufacturers are at the head of the industry and in this branch of the business the utility and conveniences made possible by the improved American desks is causing them to meet with increased favor everywhere. Our furniture trade is destined, apparently to grow much faster in the future, especially with countries in the temperate zones.

ONE of the great American railroads, the Pennsylvania system, has no fewer than 44,950 stockholders. Quite a portion of the stock is owned abroad, but the number of foreign shareholders is small. Thousands of the shareholders are employees of the railroad, which is something akin to the cooperative idea.

KOREA'S future is of more than ordinary international commercial interest. When the Russo-Japanese war is concluded, this already important market will become of greater importance, and the new American trans-Pacific steamships will aid in developing its value not only for American exporters, but for traders generally.

OUR PRICES HERE AND ABROAD.

TARIFF discussions are only interesting when they show something of practical benefit to somebody, and the subject is rarely touched upon in these columns, but in the Presidential campaign now pending some facts are brought forward which are of value to foreign purchasers of American goods. In our July issue we quoted liberally from a speech made by Mr. Secretary Shaw, head of the United States Treasury Department, in which he pointed out how foreign buyers of American goods are profiting by low prices. Mr. Secretary Shaw's speech has naturally brought forth criticism, and one of the political parties is seeking to make capital of the so-called "discrimination in favor of the foreign consumer as against the American consumer." Garbled accounts of the controversy are likely to go abroad and a disinterested presentation of the situation seems to be a duty to our readers.

The workings of the American tariff laws, in several particulars, certainly *do* give the goods to foreign consumers at lower prices than precisely the same articles can be bought for at the point of manufacture in the United States. This is an anomaly that requires explanation and the facts ought to be made perfectly clear. No business man, on the face of it, believes that a merchant would sell the same *quality* of goods to a stranger at a lower price than he would sell the goods to a friend and neighbor. As a matter of fact, the American manufacturer *himself* does not discriminate in the selling price as between the American and foreign buyer, but the foreign buyer in purchasing the goods benefits by the American tariff law in a way which many persons do not understand, for tariff writers are prone to delve in figures and juggle with tables of them in a way that is bewildering to all but students of the subject.

The real truth of the tariff is that as to many of our manufactured products, it enables American manufacturers to sell abroad, at lower prices, precisely the same good quality of implements which is required for the home market. This is due to the fact that many American products are composed largely, or in part, of imported raw material or unfinished material. On such material for manufacture as pays a tariff duty the American Government gives a rebate when the finished product manufactured from the same is exported for sale abroad. The finished product must necessarily be sold at home plus the duty, while abroad it is sold minus the duty. This is an easy, simple proposition and we hope we have made the matter plain to all of our readers. Figures are not needed to demonstrate the principle and exhaustive treatment of the tariff as a subject is not required to show our readers why they are able to obtain the lower prices.

The question naturally arises: Why does the United States continue to do business on a basis that apparently discriminates against the consuming class of the country? It may be said briefly that the country benefits by the employment given to hundreds of thousands of working people, whose wages would be lower than they are and whose purchasing power would be less, if they were employed less time and received the lower wages.

SOME of last month's South American visitors to New York were astonished to note the height of our buildings. One of our subscribers at Buenos Aires was whisked up in an elevator to our editorial rooms, which are not abnormally high. When he looked out of the window and noted the distance to terra firma he remarked: "You Americans certainly have great confidence in your men who put up buildings. I shall no longer be astonished when I read in THE AMERICAN EXPORTER about things that seem to me to be beyond belief." THE EXPORTER does sometimes print for the information of its readers items concerning new discoveries which seem incredible, but we are always careful to tell our readers what we think about the claims of the persons putting forward new ideas in any field of industry.

NEW YORK'S new subway is now considered one of the wonders of the age. Thousands of foreign visitors have inspected it and they are all delighted with the big tube.

A PEEP AT AMERICAN PROGRESS.

OUR readers are kept well informed regarding the progress which the business men of the United States are making in the matter of catering to the best interests of the foreign consumers of American products, but there are lines of effort pursued in this country which do not enter into export trade literature, but are nevertheless of interest to business men everywhere, aside from what may be shown in the matter of the higher commercial development of this country. One of these lines—comparatively new, but already well developed—is that of insurance engineering, which means that the subject of insurance has been reduced to an exact science in the United States, not only from the point of running insurance companies on a profitable and proper basis, but with a view to preventing the suffering and other than monetary losses that flow in the wake of all large fires. Conflagrations of great extent in area and enormous loss are becoming relatively fewer as insurance engineering adds to its efficiency, despite the wonderful increase in the size and population of our cities.

Some of the features of this decidedly valuable branch of American effort can well be seriously considered by our friends in other countries, not only as of prospective benefit to them in their own interests, but as of value to the welfare of the communities in which they do business. Several magazines are published in the interest of "insurance engineering," and the various matters coming under that head are treated with intelligent and exhaustive attention to the prevention of fires and the minimizing of losses due to that cause. Progress in this country in that direction is shown in the simple statement that in 1,500 out of about 4,000 American cities no roofs of wood can be placed on any buildings within the city limits. In cities thus safeguarded against the spread of fires there have been no real conflagrations. In other cities, which have not yet prohibited wooden roofs, the insurance companies are placing prohibitive rates upon structures not topped with standard metallic roofs. But roofs alone are merely incidental. Metallic window frames, concrete and iron in place of wood wherever possible, cement floors and many other similar points of construction, are being taken up in a way that foretells their early universal use.

In some of the great "skyscrapers" of New York, as some of the sixteen to twenty-four story buildings are called, one can go from basement to dome without finding an ounce of inflammable material used in their construction. In one of the big newspaper buildings in New York a few years ago a furious fire broke out in the paper room in the basement. An ordinarily-built structure would soon have been a mass of fire, and the occupants of the higher floors would have inevitably met an awful fate. As it was, they narrowly escaped suffocation from the smoke, but within an hour the fire was out, the printers and editors were able to return and resume their work, while the building was uninjured. The small loss, entirely confined to the paper consumed, was an object lesson of what improved building methods have brought about in the way of safety and prevention of monetary losses. There have been many other instances showing the value of the new idea, and its spread through America has been as rapid as it has been beneficial to everybody.

THE MACHINE TOOL INDUSTRY.

AMERICAN machine tools have long been recognized abroad as being of such excellent design and construction that there has been an enormous demand for them. A peculiar feature of this branch of international trade has been that a foreign demand has come for machinery with which to manufacture American machine tools. This phase of the situation is indicative of high tribute to the merits of our machine tools, and at the same time it has not operated to decrease the call for them abroad. In fact, the advertisement thus given to these products has been of incalculable value to the export trade in the field. The foreign consumer is quite as up-to-date as the foreign manufacturer, and he appreciates the indorsement conveyed by the latter's willingness to produce and sell to him American goods made with American machinery. Some of the consumers, perhaps more thoughtful than others, prefer to obtain the articles direct from the original manufacturers. Be that

as it may, the exportation of American machinery to make machine tools seems so far to have given that line of trade a great boom that is likely to continue for a long time.

It is gratifying to have the true worth of the American manufactured articles appreciated to the extent that is being shown, not only for machine tools, but for our agricultural implements, our typewriters, our engines and the numerous other articles coming under the general head of "manufactured products." It is evidence of the fact that our progressive manufacturing methods are favorably and profitably recognized abroad, and the continual increase in sales made by our exporters speaks volumes for the intrinsic merit of American goods.

IN the United States there are enormous plants employing vast armies of workmen. There is a limit to the domestic demand for iron and steel, so that it naturally follows, when the American market becomes overstocked the plants must either cease operations and throw their workmen out of employment or continue and dispose of the surplus product in some other way. Practically the only outlet is the European market, the key to which is low prices and in which last year we sold more than \$100,000,000 worth of iron and steel manufactures on an average of about four-fifths the prices charged to American purchasers of the same articles. This condition has led to the accusations of "dumping" made against Americans, but after all the foreign buyers benefit by anything of the kind that is being done and the American plants are kept busy, enabling our workmen to earn more money with which to help along not only domestic trade, but to spend for luxuries, money which in part goes back into the pockets of foreign manufacturers who send goods to this country.

SILK is one of the American industries that has made rapid strides within the last decade or two. This country has long since passed others in the quantity manufactured, and now uses annually about 14,000,000 pounds, or more than one-third of all the raw silk produced throughout the world. But, we would like to ask, is there *any* American industry that is not now operated upon the lines of success?

AGRICULTURAL education is one of the features of American endeavor. Not only have our inventors and manufacturers contrived to produce marvelous machines and other implements to till the soil and take care of thrifty nature's gifts to man, but the farm boy is now educated in his future vocation with the same care that the city juvenile is prepared for journalism, the medical, the legal or any other profession.

STRUCTURAL steel has become an important element in recent years in the American metal industry. It is largely employed in the construction of the myriads of new buildings that are being erected in all parts of the United States, and the export demand is growing in a gratifying way, for our friends abroad are beginning to show greater appreciation of the improvements which have lately been made in materials for the construction of buildings.

ELECTRICAL machinery of American make is now in use in even the most remote portions of the globe. Plants in far away India and in some of the inaccessible regions of Africa, saying nothing of other more generally favored localities, are using our dynamos, our wiring appliances and the electrical power, light and telephone systems that go with the development of this industry.

CANADA and the United States are again cooperating for the protection of the salmon fisheries. The question is of importance to foreign consumers of North American salmon, for without joint action by the two Governments the supply will be decreased and the prices advanced beyond what ought to be paid for this article of food.

INCREASINGLY large orders are reported for American typewriters in the export trade. The machines we manufacture seem to fill every want of the user, and their comparative cheapness is something that causes wonder abroad.

WHAT IS DOING IN AMERICA.

American Cotton Fabrics for Export.

WHILE the Russo-Japanese war has seriously affected the Oriental demand for American cotton fabrics, it may interest readers of THE AMERICAN EXPORTER to know that the final outcome of that conflict, whatever it may be, is bound to give increased impetus to the spindles and looms of the United States. The immediate effect of the struggle in the Far East, so far as it relates to American cotton manufacturers, is deeply impressive. For a considerable period prior to the closing of the ports of Manchuria to American trade in 1903, American manufacturers sold in the Manchurian provinces and in China the enormous total of 36,000,000 yards of cotton cloth every month. The trade suppression as to Manchuria began in April, 1903. In the month following, our sales of cotton fabrics to Manchuria and China fell to 15,000,000 yards, and then began a progressive decline which has continued ever since, our latest figures being for November of 1903, in which month our sales to that whole Eastern world, with more than 400,000,000 of population, amounted to only about 1,000,000 yards.

From the figures quoted the reader may get the notion that the American manufacturer of cheap cottons is disheartened; yet nothing could be further from the fact. The Oriental market for the cheap cotton fabrics of the United States has only been blockaded, not destroyed. The consumers are there—hundreds of millions of them—and they are just as eager to buy the American cloth as the makers are to sell. Moreover, when peace is restored, no matter which belligerent wins, there will be an understanding—not negotiated in Tokio or in St. Petersburg—that there shall be an equality of privilege in all the markets of the Chinese Empire, including Manchuria, for the products of human industry. That is all the American manufacturer asks. He needs nothing more, he expects nothing less.

Therefore, as indicating the American expectation regarding the Oriental market for cotton cloth, attention is invited to a few facts concerning the spinning industry in the Southern States of the United States of America, where the cotton is grown, owned, manufactured and packed, and where most of the cheaper fabrics specially made for Oriental markets are woven. In Newnan, in the State of Georgia, one firm is installing 7,000 new spindles. In Marion, South Carolina, 3,000 spindles are being added to an already large mill. A large firm in Atlanta, Ga., is spending \$50,000 in machinery to enable the establishment to run both night and day. One of the most successful mills in the State of Texas is adding 3,000 spindles to its machinery, and a similar concern in the State of North Carolina is putting in 3,200 new spindles. The capacity of a year-old firm in the State of South Carolina is about to be doubled, giving it 24,880 spindles and 700 looms. A new mill just completed in the State of Alabama has 10,336 spindles and 300 looms. One of the best mills in the State of North Carolina, now operating 6,000 spindles and 100 looms, will shortly add 8,000 spindles and 500 looms, and a factory in the State of Alabama is receiving an addition of 11,200 spindles.

Canned Tomatoes.

SOME notion of the extent of the tomato-canning industry in the United States of America may be derived from the fact that the sixty canneries in the single State of New Jersey expect to place more than 5,000,000 cans of the product on the market this year. Inasmuch as this commodity is a considerable item of American exports it may interest foreign readers to know how the tomatoes are prepared at a first-class cannery. When delivered, in a thoroughly ripe condition, they are placed in buckets and transferred to huge revolving colanders, about five feet in circumference, and divided into several compartments, each capable of holding one or more crates of tomatoes. When the vegetables are dumped into the colander, it revolves and carries them into a tank filled with hot water. This is the scalding process to soften the skin and otherwise prepare the tomatoes for future handling. After being scalded they are emptied into buckets and carried into the shop, where dozens of women and girls stand at long tables doing the peeling and coring.

After this the tomatoes are again put into buckets and carried to another table, where women and girls sort them, throw aside the over-ripe produce and pass along the best to other women and girls who pack them into the tin cans. All the packing is done by hand, and more skill is required to insert the pulpy mass into the cans so that it will retain its original shape than would be supposed. From the packers the cans are passed to the weighers to see that each contains the desired quantity.

The girls who weigh the cans pass them on to young men stationed at a recently invented machine for putting on the covers. This machine is built on the principle of a powerful die cutter, and its advantage over the old way of "capping" the cans is that it does away with the necessity of soldering with the lead that so often trickles through in the operation. The capping machine is operated by a young man who works with a lever and foot press. An assistant places the circular tin top loosely on the can and shoves it along to the man at the machine; he places it under the drop and in a twinkling the drop descends and welds the cap permanently on the can. There is a small pin-head hole in the top; this is to allow the air to escape in the capping operation. After this the cans are placed on a conveyer and carried through a steam-heated compartment to the other side of the shop. This

serves to partly cook the tomatoes and at the same time forces out whatever air may remain in the tins.

After this process the cans are taken up by the tippers—the men with tipping irons who cover up the tiny orifices in the heads of the cans with solder. Then the tins are placed in big metal baskets and are dropped into vats of hot water, where they are allowed to remain for a few moments to complete the cooking process. This practically completes the work, for there is nothing more to do except place the labels on the cans and pack them in wooden boxes to be sent broadcast over the world. There is no waste product in the tomato-canning business; every particle is used in some way or another.

New Rotary Engine.

MECHANICAL experts in the United States of America are deeply interested in a rotary engine invented by William Hoffman, of Buffalo, N. Y., which some of their number regard as likely to bring about a revolution in the fields of industry, commerce and transportation. If the inventor's expectations are realized, railroad trains will make 120 miles an hour with less friction than at present, steamships will greatly increase speed and single cars will be run at lightning pace on steam or tram railway tracks, independent of trolley connections, all with much more economy than under existing conditions. On top of all that, the power in all kinds of factories will be produced at a much less cost in a much smaller amount of space than at present.

The feature of Mr. Hoffman's rotary engine is that it makes use of the expansion of steam, the engine being cut off from connection with the boiler supply of steam for two-thirds of every revolution made. That means great economy in fuel and steam. But Mr. Hoffman says that steam is not the only means of propulsion that can be used in his engine. He says he intends to make gas engines of the same type, exploding gas in the chamber in which steam is used. So it is hardly possible to realize the revolution which this engine will create, if it comes up to its inventor's expectations.

It is claimed by the inventor that the Hoffman engine can be utilized in every instance where a steam or a gas engine is used now. The absolute absence of vibration makes it especially desirable for marine purposes. It will reduce the space occupied by present engines in boats 75 per cent. It will reduce the coal-carrying space in boats 25 per cent. It will lessen the cost of construction of new ships, by doing away with the strengthening now put in to meet the vibration of the present type of engines. It can be utilized for locomotives. It will do away with the rack and tear of piston rods going in opposite directions, and locomotives with four-foot driving wheels can be driven at a speed of from 100 to 120 miles. Then the engine will be used in the propulsion of single cars. A salamanderine or flash boiler, heated by petroleum, and a fifty horse-power engine can be put on the front platform of a car and leave room for the motorman. The engine will be specially valuable in connection with the production of electricity. The demand for an engine of high speed by the electrical companies was what started the boom for turbine engines. The engine will work a great change in the factories of the world, in every place where a stationary engine is used. Then there are automobiles, launches and a thousand and one other things which will be affected.

Wireless Telegraphy in Fire-Signaling.

ONE of the latest and most promising adaptations of wireless telegraphy in the United States of America is its use in prevention of forest fires.

The need of forest preservation in America has only recently aroused the interest which it deserves. There has been long in progress a thoughtless destruction of standing timber in various States and Territories which, if unchecked, would soon denude vast areas of valuable woodland. This destruction is now checked in large degree by Federal laws relating to unoccupied lands belonging to the United States, and by State laws concerning State lands. The forest fire, however, is an element beyond the reach of human legislation, and consequently a fire service has been established in many States and in the territories of the United States having for its purpose checking of the wilful or accidental destruction of forests by fire. This service includes an organization of fire-wardens for given districts, with police power and authority to summon their neighbors to work in fire-fighting. These officers, who are paid by the Government, have methods of signaling from one district to another which are, as a rule, highly effective. Their efficiency in this respect, however, seems likely to be greatly increased by a system devised by the Secretary of Agriculture of the United States, which includes the wireless transmission of signals in case of fire on the Government forest reserves. Fire causes considerable destruction of valuable timber in these tracts, and it is the design of the department to arrange suitable signals, so that on an outbreak of fire the rangers may communicate the alarm and secure sufficient assistance to stop the destruction at as early a point as possible. This system will be arranged to cover all the important timber reserves of the Government, and is expected to result in a vast saving. The Weather Bureau, which is also in charge of the Department of Agriculture, is developing its system of wireless telegraphy for the transmission of storm-signals and weather reports, and it is expected that within a few years an extensive use will be made of this comparatively new means of communication for this purpose.

EVENTS IN AMERICAN PROGRESS.

Great Achievements in Irrigation.

UNTIL a year or two ago the Snake River desert in the State of Idaho, U. S. A., was one of the dreariest and most forbidding regions of the whole North American Continent. Nothing but sage brush would grow there, the lands were utterly worthless for grazing purposes and the only living creatures to be found were coyotes and poisonous reptiles. But the magic wand of science and American enterprise has touched the desert and made it to blossom, almost literally, like the rose. Engineers in the service of the Government, finding traces of fertility in the soil, chose the Snake River desert as a tract for artificial irrigation, under the new scheme for which Congress has appropriated several million dollars. At an expenditure of \$2,600,000, which has been set aside for the construction of great impounding dam and diversion canals, fully \$12,000,000 of taxable property will be created in this basin. Taking as a basis the last census agricultural figures for Idaho, the 120,000 acres to be reclaimed under this project will, when settled under irrigation, represent the latter value, while the annual earnings of the land will amount to about \$2,000,000. With this area cut up into 1,400 new farms, as is proposed by the Government, a rural population will be created of 7,000, which will bring with it an urban population of probably another 7,000, or 14,000 people.

The Snake desert basin when irrigated will afford an ideal example of Western stock raising under the humane and profitable method of winter feeding. On any of the great Western ranges the cattle are left to shift for themselves the year round, entailing, during the cold season, great loss of stock and always untold brute suffering. Around the basin extend vast stretches of unclaimed land, which must always remain useful solely for grazing purposes. The irrigation of this tract of over 120,000 acres will provide, through luxuriant crops of alfalfa, winter feeding for tens of thousands of head of stock. Where now one steer requires thirty or even forty acres for his support, under irrigation the forage from one acre will more than support and finish him off for the market. Idaho has already attained distinction as a fruit producer, although the altitude is a little too great for the best growth of trees.

In other irrigated sections of the State, apples, plums, apricots, grapes and melons reach a high state of perfection and command fancy prices. Men have become wealthy from the careful cultivation of twenty and forty acre tracts, and enough can be raised from five acres of this irrigated land, exhaustless in its deep fertility, to support a family in comfort. The irrigated communities of Idaho have become among the most prosperous in the world.

American Tests of Coal.

WHILE there is no need whatever of a government monopoly of the coal product in the United States of America, such as is now urged in England with regard to the superior steam-making coal of Wales, there can be nothing but approval for the extensive tests of coal qualities now in progress at the St. Louis Exposition. These tests are conducted by scientists of established reputation for the sole purpose of determining the relative values of coal from various deposits. All expenses of these tests, including cost of material, transportation and labor, are paid by the Government. The equipment, which is also free to those using it, consists of steam boilers, steam engines, electric generators and motors, a complete gas producer, with economizer, scrubber, and holder, beehive coke ovens, a vertical gas engine, crushers, washers, driers, bins, one English and one American briquetting press, with outfits complete. There is also a complete plant of boiler and engine testing apparatus, and a well-equipped chemical laboratory, where calorific determinations and proximate and ultimate analyses of each fuel are made. All this work is in the hands of specialists of long training. The samples to be tested are selected at the mines by experts sent out for the purpose. On arrival, part of the coal is put through the gas-making plant, part through the coke ovens, part tested under the boilers, and part goes to the briquetting machines. A 250-horse-power gas engine is located alongside of a 250-horse-power Corliss engine, and both connected to electric generators. The coal will be transformed into electrical energy by both the steam and gas processes, and the results compared.

Skill in Cheesemaking.

IF one were asked to explain the high quality of American cheese and the important place it occupies in United States exports, the correct reply would be something like this: First, excellence of natural materials; second, cleanliness, skill and watchfulness in treatment, and third, sound judgment and businesslike method in preparing the finished product for the market. The American cheese-factory of to-day is a model of neatness, system and skilled labor scientifically applied. In its operation there is no uncertainty as to results, no foulness and absolutely no waste—all by-products being utilized—the sugar of milk forming an important factor of infants' food and other elements serving as the base for pills, tablets and various uses in chemistry and medicine.

At an up-to-date American cheese factory milk, brought in clean, closed cans, each containing from six to twelve gallons, is emptied into a receiving tank capable of holding 600 gallons. This tank rests upon scales of thorough

accuracy. After the milk has been weighed it goes through pipes into the vats within the factory. Milk received at night remains in these vats till morning, the souring process which is constantly going on in milk being conducive to cheese-making, as is also the mixing, in the morning, of the sweet and slightly sour milk. Modern vats used in the cheese-making processes are the same in shape and contain about 7,000 pounds of milk each. Between the lining and the exterior portion of the vat there is a compartment into which hot water is piped from the engine boiler, and is kept at a temperature of 85 degrees or thereabouts, and serves to properly scald the milk. **Rennet**, a liquid made from the stomach of a calf, is used to coagulate the milk, a few ounces being sufficient for 1,000 pounds of milk.

After the curd has formed and has been sufficiently cut to liberate the whey, a small piece of it is placed upon a hot iron. If it adheres to the iron it is ready for the presses. It is then taken from the vats and placed in telescopic hoops, drawn out to their full height. Cheese capping cloth is placed within the hoops and the curd fills them to the brim, after which the cover is put in place and screws, capable of raising a building, are applied. The hoops telescope as the pressing process continues and the curd becomes cheese. When taken from the presses the cheese is taken to the dryhouse and placed upon racks. What is known as a gang press, which will press twenty or more cheeses at once, is often used instead of the individual presses.

The whey, which is the recement liquid from the cheese factory, goes by way of a trough to the sugar of milk factory nearby, and is placed in vats of 500 gallons capacity, where it is boiled. Next a small quantity of diluted sulphuric acid is added, which causes the casein and fat to separate and leaves the sugar liquid. The casein—the coagulated part of the whey—settles to the bottom, and the fat comes to the surface. The sugar liquid thus separated is emptied into tubs. Having been boiled down into a saline mass of brown color, it is ready to crystallize. Hard yellow crystals form about the sides of the tub and about a stick placed therein. The remaining liquid is again put into the vats to be boiled, and the crystals are removed by the aid of a hatchet and are placed in bins. They next go to the refinery. Here they are repeatedly boiled, crystallized and decolorized, and finally ground by machinery to powder form, when the product is ready for the market.

American Seeded Raisins.

UPWARDS of 50 per cent. of the grapes grown in the State of California, U. S. A., are now converted into raisins, and while this industry is but ten years old, it already affords employment for more than 15,000 persons. The raisins are dried and partially stemmed on the vines and then taken to the factories where they are seeded. The seeding is done entirely by machinery. Preparatory to seeding, the raisins are "processed," to use a technical term. First they are subjected to a dry temperature of 140 degrees F., after which they are chilled, and after being subjected to the latter process they become as hard and dry as a bean. Then they are in shape to go through the final process of stemming, which takes off the short stem remaining on the raisin when it comes from the packing-house. The raisins are then put through a rubbing machine, which has the effect to remove the short stem mentioned and leave the raisin in its simple form.

Then the raisin is subjected to a moist heat of 130 degrees F., which has the effect of making them soft and pliable. Then it is sent on to the seeding machine, where it passes between a pair of pure rubber rollers, and is then impaled upon a roll of small saws, which presses the seed out through the surface of the raisin. The saw roll, with the raisin thus impaled, revolves and passes over a flickering device, which whisks off the seed, leaving the raisin still impaled on the saw roll. The saw roll, still revolving, passes around until the seeded raisin strikes a series of fingers, which frees the raisin from the roll. The raisins then pass through a system of chutes, and are packed by girls in one-pound cartons.

Profit-Sharing.

ONE of the most extensive coal-mining companies in the State of Pennsylvania, U. S. A., has for four years maintained a system of profit-sharing which is highly successful. Under this plan employees of the company buy its preferred stock and pay for it at the rate of \$1 per month on each share. They have the privilege of withdrawing from their contracts at any time upon thirty days' notice, and when withdrawals are made, purchasers receive back the full amount of their payments, together with interest at the rate of 5 per cent. per annum. A new series of stock-purchase contracts begins the first day of each month. Since December 1, 1900, there have been 45 series of stock-purchase contracts, the first three of which matured on May 1, June 1 and August 1, 1904, respectively.

The association purchases the company's preferred stock on the market from time to time and dividends paid on the stock so purchased accrue to the individual purchasers, all expenses of the association being paid by the company. The earnings thus accumulated by the association during the first forty-five months of its operations, or up to July 31, 1904, aggregated \$106,516.30. These earnings are divided pro rata among all the purchasers who continue their monthly payments until contracts mature. At the end of the last fiscal year there were 1,020 holders of the company's stock among its employees, representing a total of 8,152 shares.

Preservatives for Steel Cars.—Several of the largest railway companies in America are applying the copper preservative process to all their steel cars.

AMERICAN ACTIVITIES TO-DAY.

Progress in Life-Saving Service.

SEVERAL recent American inventions are noteworthy as marking the furthest application of creative genius to humane purposes. One of these is an automatic life boat recently adopted by the United States Government for use in rescuing persons from ships wrecked or disabled. This automatic life-boat operates itself without oars or sails, and if it happens to capsize the engine stops of itself instantly. This point is important, because if it were otherwise the craft might run away and leave its crew struggling in the water. Instead it pauses promptly and the men are enabled to scramble aboard again. Like an ordinary life-boat, the automobile boat is self-righting and unsinkable. This new kind of life-boat has a heavily weighted keel, while at each end is a large air chamber. Though it may be upset, it is bound to turn right side up immediately because of the weight of the keel and the buoyancy of the air in the chambers. The rear chamber contains the engine, run by gasoline, to which is attached a propeller. When the boat is in use the machinery is operated from outside the air chamber, much in the same way as an automobile is run. Nothing could be more simple. The engine, of 27 horse-power, weighs only 40 pounds, and, of course, is neither visible nor in the way. It drives the boat swiftly through the surf, enabling the crew—and this is a very important point, indeed—to reach a wreck unfatigued and ready to employ, where it is most needed, the energy which might have been expended in laborious rowing. Many a time has it happened that life savers have arrived at a distressed vessel so utterly used up by their exertions as to be unfit for the urgent duty required of them. The automobile life-boat obviates this difficulty, but in case of accident to the engine is provided with oars and a sail.

Another American invention which promises to be of great value to the Life-Saving Service, but which is still under official tests, is an acetylene gas apparatus for illuminating the beach at night. It is intended to be used at the scene of a wreck where, in the night-time, the darkness is liable to interfere very seriously with operations of rescue. Sometimes the rescuers are forced to abandon work until dawn arrives. But this machine, which the Government may shortly adopt, throws a light so brilliant that every man on a wreck 500 yards off shore can be clearly seen. The illumination is almost like day, and a newspaper can actually be read with a telescope at a distance of 1,500 feet. Another important point about the light is that it has an extraordinary fog-piercing power—a notable advantage, inasmuch as so many vessels go ashore in foggy weather.

Equally important and morally certain of Government approval, is what is termed "the illuminated shot," which is designed to be fired over a wrecked or helpless ship in the same way as an ordinary shot with a line attached, such as is discharged from a sort of cannon on the beach, when a rescue is in progress. When the ordinary shot is employed it is not always possible to tell, from the shore, whether or not it has made a hit, and even the people on the ship may not know where in the rigging the all-important rope has landed. But the new projectile has four holes in its base filled with a slow-burning composition, and when the gun is fired the stuff is simultaneously ignited, causing the shot to give a light similar to that of a rocket in its flight. If the first one is seen to fail the aim may be corrected accordingly. But it should be explained, perhaps, that no kind of line-throwing gun is effective beyond 400 yards. When wrecked vessels are further than that off shore the life-boat must be used.

There is now under construction another American contrivance which seems worth while. It is a "throwing gun" made like a fowling-piece, which has a stock like a rifle and is meant to be held to the shoulder. The projectile discharged from it goes as far as the cannon shot, and, as it flies through the air, unwinds with great swiftness a cord from a stick. The cord is only a tough kind of twine, but when once communication with a vessel is established by this means it is easy enough to use the cord to pull aboard a small rope, and then a big one, on which, if desired, the breeches buoy may be rigged for the rescue of individual passengers, to be pulled ashore one by one.

The success of the new shoulder gun as used by fire departments in many American cities for getting a line over high buildings has suggested the possible usefulness of the same implement in the Life-Saving Service, and experiments to determine its value are now in progress. Still another device which is under consideration is the "boomerang life line," which is a piece of wood two feet long, shaped like an Australian boomerang, and designed to be thrown in the same way. To its middle is attached a brass swivel, with a strong light line carried on a spool so as to run freely. The spool, contained in a wire frame, is held in the left hand, while the boomerang is thrown with the right hand, horizontally. At is flies, it carries the line with it, the range being 150 feet.

Among various appliances for the Life-Saving Service which are still under test, two others are worthy of notice. One is a "life-saving belt," the other is a "life-saving globe." The former is a ring-shaped buoy, and the latter is a spherical tank of iron which accommodates sixteen people. The inventor of the globe got his idea from seeing an iron water tank afloat after a frightful wreck, on a rocky coast, in which he lost his entire family. It is an unsinkable affair, and cannot be capsized. Ventilation is furnished by a pipe at the top, and a sail and rudder afford means of navigating this curious contrivance. A number of human beings might live in it for weeks, with a

supply of food, which, it is to be hoped, they would have an opportunity to put aboard before being obliged to cast themselves adrift upon the cruel and treacherous ocean.

Particularly interesting is a giant match recently adopted by the Life-Saving Service for use when a light or a fire is wanted in a hurry. This match somewhat resembles a "vesuvian" on the end of a long stick. It may be ignited by rubbing the end on the waterproof box, or on any safety matchbox, but, once ignited, it will not go out. If blown out, it instantly ignites itself again, and it cannot be put out by dipping it into water. In short, it is an unextinguishable torch in miniature, easily carried in the pocket of the surfman when he patrols the beach at night with his lantern. The importance of being able to obtain fire promptly in life-saving operations along shore is very great. The surfman's lantern may go out. Or it may be impossible to build bonfires to serve as a signal to a wrecked vessel.

The value of this giant match was illustrated only a few months ago on one of the Great Lakes of America. A ship had gone ashore and the life-savers, robbing a near-by fence of a quantity of whitewashed rails, built with them a gigantic sign across the face of a steep bluff, reading: "Aid Is Coming." It was pitchy dark, but the sign was brilliantly illuminated by starting large bonfires under it, and the news that help was at hand encouraged the distressed people to wait for the rescue that presently arrived.

Advance in Automobiles.

WITH the steady advance of American enterprise in other branches of invention and construction, it is but natural that we should make corresponding headway in building automobile vehicles adapted to the conditions of our broad and complex industrial and commercial life. It is only within recent years that the American people have been aroused to the importance of good roads throughout the country, affording easy communication between the producer and the consumer of the life-sustaining staples. Now, however, many States of the American Union are spending generous sums of money in building safe and spacious public highways, and these splendid thoroughfares serve naturally to encourage the manufacture of automobiles. As indicating the advance of American energy in that direction, we are at liberty to quote the following expressions from a mechanical expert who has built and rebuilt more miles of street railway in the United States than any other living man, and whose accuracy of statement is vouched for in the highest technical circles:

"Five years ago there were no automobiles. During the last twelve months our automobile output exceeded in value all the locomotives built in America by \$20,000,000, and the industry is scarcely out of its infancy. The trolley car and draft horse will go together; there is no room in the crowded streets of our largest cities for either."

Growth of an American State.

THE rapid growth of American commonwealths is strikingly illustrated in the State of Texas, U. S. A. Texas this year has passed the State of Missouri in population, and there are now only four States that contain more people—New York, Pennsylvania, Illinois and Ohio. In area Texas is nearly a third larger than all four of them. At the present rates of increase of population Texas will pass Ohio before 1920, Illinois before 1930, Pennsylvania by 1949 and New York by 1950, and become the most populous State in the Union. If it were as densely settled as New York now is it would contain 41,000,000 souls, and when it becomes as densely populated as England or Germany it will contain 95,000,000. By the act of Congress admitting it into the Union the State may be divided into as many as five States whenever the people desire division, but division has never been seriously proposed.

Since 1860 Illinois has had more miles of railroad than any other State till this fall, but on September 1st Texas exceeded it, having now 11,517 miles of main track. The exports from Galveston are now greater than the exports from Philadelphia, Baltimore or Boston. Only New York and New Orleans make larger outbound shipments, and Galveston will exceed New Orleans in a very short time and become the second exporting city in America.

Texas produces about one-third of the entire American cotton crop. More wheat is now shipped thence than from both New York and New Orleans. Galveston is nearer the trans-Mississippi wheat fields than any Atlantic port, and the Panama Canal will bring it very much nearer than it now is to the Pacific ports.

America to Build the Greatest Battleship.

PLANS are now being prepared at the Navy Department of the United States for what is expected to be the most powerful battleship ever placed on the sea. The battleship will be of from 18,000 to 20,000 gross tonnage, but the most radical departure will be in respect to armament. Instead of, as now, arming the vessel with a main battery of heavy guns and graduating the rest of her armament from 6-inch rifles down to six, three and one pounders in her second battery, the new ship will carry only two types of naval ordnance.

Her main battery will consist of ten 12-inch guns, the heaviest now in use in the American navy, placed in turrets and in broadsides, and her secondary battery will be made up entirely of at least twenty of the new 3-inch quick-firing guns.

America's Future and Power.

IN a review of a new book just issued in connection with the "Political and Literary Annals of the French Academy," M. Hanotaux, a member of the Academy, whose reputation is international, has written a remarkable article on "The Future and Power of the United States."

"The great American Republic," he says, "is already high above the horizon of the commercial world. Its attitude is menacing. All eyes are turned toward it. One word will express its position, 'power,' and one word will justify it, 'organization.' Power is shown nowhere so much as in a mere enumeration of the elements which make up the present and future greatness of the United States. Its territory is as large as that of Europe. It has 90,000,000 inhabitants. It touches the world's two great oceans. Its climatic conditions range from tropical to arctic. All kinds of minerals, from gold to coal, are found in its mines, along its rivers, and in alluvial deposits.

"All kinds of plants, from the cedar to the hyssop, are there; so, too, are all kinds of animal wealth, from the whale to the bird of paradise. The articles of primary importance, iron, coal, cotton, cereals, all kinds of machines, from those harnessed to Niagara Falls to those which dress a hog in five minutes, are there. Above and over all, permeating the life of the people, is an active and fertile genius, a spirit of enterprise, an assiduity of labor, perfect liberty and equality of all the citizens. If these are not the elements of a people's progress and prosperity, what are? Here there is a vast army armed to the teeth for the arts of peace, and even for the arts of war, lifting itself beyond the oceans, not a month from the ports of the Old World, but a week. If one considers the question of freight, the United States is nearer to the Mediterranean than Liverpool is to Marseilles.

"To-morrow this colossal empire, master of the Panama Canal, will interfere in some way between Europe and Asia. It will control the commerce of the West and the East, for it will hold the principal way. Such, then, is its power.

"In the matter of organization the Republic rules by means of a voluntary discipline which watches over all the larger industries, which subordinates them to very careful calculation and to ripe reflection. It follows the materials of commerce from their origin up to the very last step in their manipulation or preparation for the world's markets. It combines the efforts of all, and it concentrates all the forces of domestic production for the purpose of pushing its products with an irresistible impulse upon the markets of the world.

"This is the discipline that organized the trusts, that created the enormous fortunes always associated with the labor whence they are derived, that is only one weapon more in the hands of the men of genius who know how to create them. This discipline has created a still more intelligently wielded and terrible weapon, the graduated tariff, continually changed to meet changed conditions, and modified to coincide with the progress of the country. Sheltered behind this for fifteen years the American Republic has been forging ahead with astonishing rapidity and success. The Republic knows what it wants and whither it is marching. It is well posted as to its resources and as to the resources of its adversaries. It opens and closes its gates as the stranger is considered useful or harmful; in other words, treaties of reciprocity must really be the means of reciprocal trade.

"The admission of immigrants, or in other words, the importation of labor, is as carefully watched as is the importation of goods. On the battlefields of international trade clever strategists have organized a trust vaster than any heretofore conceived, which binds the different States and the different industries therein. I refer to the great national trust, the tariff. Thus, at the beginning of the twentieth century, the United States faces the world as a most desirable market, on the one hand, and as an awful menace to manufacturing nations, on the other. The nation or the individual that will make any effort to establish vast commercial relations in the future must be prepared to measure forces with the two great elements of the Union's power—its strength, based on its resources, and its organization. To what conclusion will a careful study of those two factors lead us? Is Europe in general, and each particular power, doomed to inevitable and irremediable defeat?

"Is the battle that is to be fought hopeless? Will the prosperity and progress that have marked the American Republic's movements during the last decade or two continue until they obscure all else? In other words, are we to be confronted by an American peril more terrible and more pressing than the 'yellow' peril, one that is to wield against the Old World the weapon before which that Old World is to go down to irretrievable defeat?"

Industrial Harmony.

IT is the proud boast of the largest firm of locomotive builders in the United States of America, a concern whose employees at times number as high as 15,000, that it has never had a strike. No discrimination is ever made in favor of or against union men. All hands know that the latch-string to the head of the establishment is always out, and that any one, of whatsoever station, can secure a respectful hearing of any grievance he may have. It takes years of good faith before the workmen can understand that principles such as these are traditions of a plant, and if such traditions are to be kept alive they must be instilled in a sufficient number of men to form the backbone of the later element. It is a difficult matter to teach an old dog new tricks, so that the apprentices offer the most fertile field for the development of a good, loyal body of men. This establishment

has always maintained a system of apprenticeship, and the certificate of one of the proprietors who entered as an apprentice is evidence not only of the establishment of the system in the early sixties, but also as to its effectiveness.

Success of the Traveling Stairway.

THE moving staircase now in successful operation in many large stores and other buildings in America is a valuable addition to the means of reaching one floor from another. It is really an inclined floor, moving upon a series of small wheels, which, in turn, are operated by larger ones that might be called driving wheels. The surface of the moving floor fits to the surface of the horizontal floor so closely that there is no danger of a person catching his feet between the movable and stationary sections. Any one who wishes to go from the ground story to the one above, simply walks upon the incline, and, in less than a minute, is carried to his destination. He may remain still on the incline, or walk along it as he pleases. The motion is so uniform that there is no vibration or jarring; and so rapidly do the stairs operate that one of the devices in New York City will carry 2,000 passengers in an hour to a height of about twenty feet.

The driving wheels, around which the endless floor moves, are usually connected by belting to an electric motor or steam engine. About 2½ horsepower are required to carry 600 passengers an hour; and double this amount to carry 2,000 passengers. Calculations based on actual experience show that by the use of electric motors, it costs but 7 cents to carry 1,000 people per hour.

Typewriting by Electricity.

WHAT is said to be a feasible means of operating a typewriting machine by electricity has been devised by a citizen of Newark, N. J., U. S. A.

It has always been necessary to depress the keys of a machine sufficiently to throw the type-bar against the inking ribbon and leave its impression on the paper, this action releasing a universal bar, which allows the carriage to move forward one space as each letter is printed. This can now be done by the aid of the electric current. Each rod is connected with a little electro-magnet, and, as soon as the current enters any coil, its corresponding rod is thrown forward, just far enough to hook the lower end of it beneath the edge of the central disk. Just as this connection is made, the passage of the electric current through another electro-magnet depresses the disk, pulling the rod down, and striking the type-face on the paper as though it were done by the depression of a key with the finger.

To form the connection between the individual magnets and the operating mechanism, the writer wears a set of metallic thimbles on the finger, which are wired to the source of the electric current. The instant connection is made with one of the metallic plates on the keyboard, the current passes through the plate into the corresponding magnet, and thence to the disk in the center of the machine.

Profit in Old Tin Cans.

AN enterprising machinist in Baltimore, Md., U. S. A., has established a profitable business in a factory which is devoted to saving the tin in old tin cans, which he buys from junk dealers in hundreds of thousands. The machine used in this work is of a cylinder style, and is run by steam, gas or gasoline, and is of two horse-power. It is operated by two boys. One feeds the can at the front, the other takes out the cans at the back of the machine. The first boy puts the can into a round, revolving cylinder that holds eight cans. As the first can is so placed the engine is started, and it revolves the cylinder, making room for the next, and so on until the cylinder is filled. When the can reaches a horizontal position it is met by two saws that revolve around the can, taking off top and bottom at the same cut. As soon as the saws have finished their work, a brush passes through the can, cleaning it. The can is now taken from the machine and passed through a rotary cutting machine, which straightens and at the same time polishes it, so as to make it appear as a piece of new tin. In this way 30,000 cans are cut in one day by two boys. Now that the tin is back to its former stage, it is ready for the commercial world, and is placed in presses, where it is stamped into various shapes, as roofing caps to hold tar paper on, corners for berry crates, signs and numerous other articles. The tops and bottoms are used to manufacture sash weights.

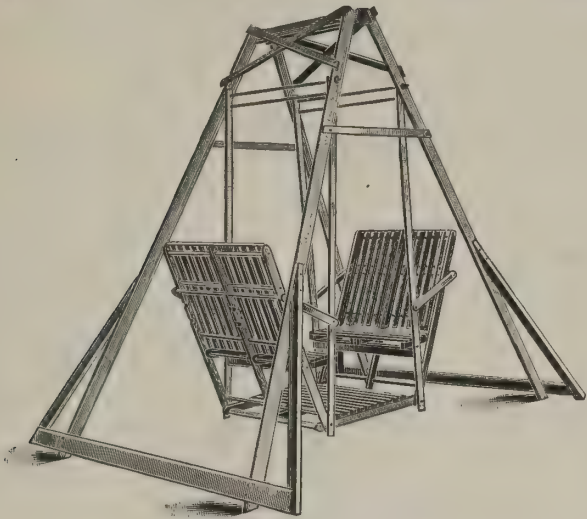
Powerful Lifting Machine.

ONE of the greatest lifting machines in the world is in regular use in the extensive shipbuilding yards at Newport News, Va., U. S. A. It is utilized in transferring heavy portions of warships, such as armor plates, engines, boilers and guns from the wharves to their positions on vessels under construction. This machine is known as a circular derrick, and is operated entirely by electric power. It has actually raised a weight of over 150 tons, swinging it around a circle 147 feet in diameter. Loads weighing 70 tons have been lifted and swung in a circle of 207 feet. The derrick will lift the heaviest cannon to a height of 100 feet above the surface of the water, and yet its machinery is so simple that but two men are required to operate it.

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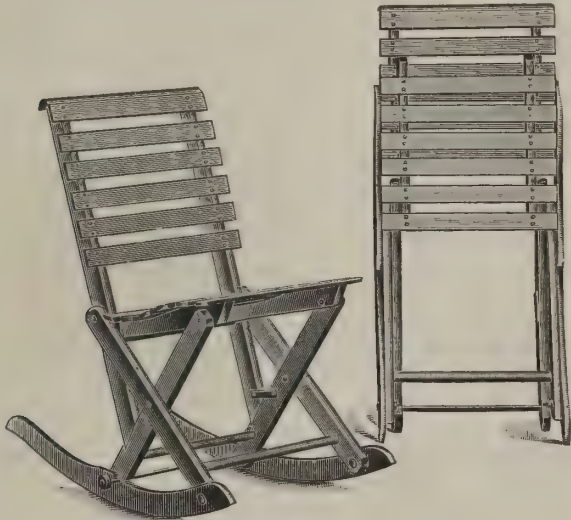
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For grace, solidity and beauty the New Michael Four-Passenger Adult Lawn Swing has no equal. All parts are bolted or screwed. We use no nails except in chair slats. No tools required in setting up. We guarantee the New Michael Four-Passenger Adult Lawn Swing to be the best made. Opens and closes like a jack-knife. Contains about 20 cubic feet each, and weighs, each, 150 lbs.

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Six Folding Rockers, crated, containing about 14 cubic feet; weight, 48 lbs.

Price, per dozen \$9.00



Michael's Lawn Settees and Folding Chairs.

Our Lawn Settees and Folding Chairs are the most practical ever placed upon the market. The curve in back is exactly right. Painted red or green, or natural hardwood finish. Six 5-foot Settees, crated, containing about 25 cubic feet; weight, 96 lbs.

Price, per dozen \$18.00

Six Folding Chairs, crated, containing about 14 cubic feet; weight, 30 lbs.

Price, per dozen \$6.00

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We also make the Michael Porch and Lawn Reclining Chair.

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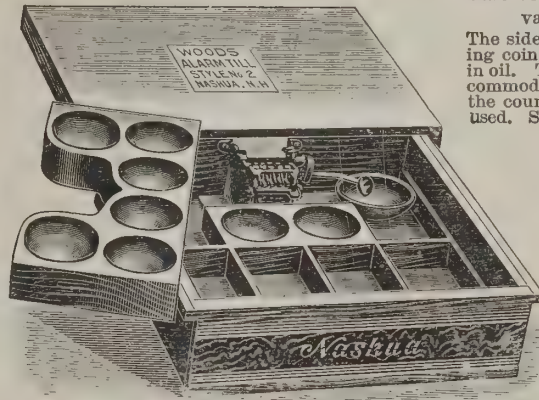
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Style No. 2.

The drawer is made with Oak or Black Walnut Front, varnished and polished.

The sides, back and half-globe sliding coin cup of hard wood, finished in oil. The apartments made to accommodate the currency and coin of the country in which they are to be used. Size, 17x18 inches.

The Lock has 32 Combinations, which can be changed instantly, and CAN NOT be discovered by the feeling of the finger keys. This lock is safe, convenient and perfect. The Alarm does not sound except when an attempt is made to open the drawer by an unauthorized person. This drawer is the original automatic alarm cash till of America and is now in universal use by merchants in U. S. A.

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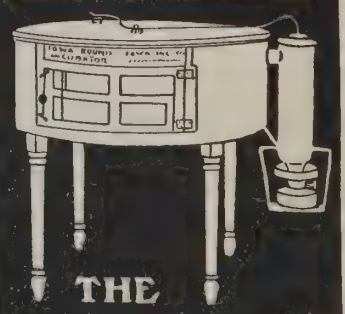
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THE IOWA

AMERICA'S FORWARD MOVEMENT.

The Cotton Problem in Europe.

IN view of the enormous increase in the consumption of raw cotton in the United States in the last five years, the question of insuring the future supply of that staple for their mills has become a matter of profound concern to European manufacturers. Present conditions point to a time when the entire cotton product of the United States may be needed for American spindles and looms. The tendency in that direction has naturally excited grave apprehension among European economists, who see in these changing conditions the elements of an industrial revolution. The cotton question indeed is to-day a problem which affects all Europe and which many of the ablest leaders of Old World industry and finance are striving earnestly to solve. As an example of their efforts, special interest attaches to an address recently delivered by M. Paul Bourdard at a meeting of the French Colonial Cotton Association at Marseilles. In the course of his address, which has been brought to the notice of the Department of Commerce and Labor by Mr. Robert P. Skinner, United States Consul at Marseilles, M. Bourdard made the following significant statement:

"The entire world produces, 14,000,000 bales of cotton, of which the United States alone contributes 10,500,000 bales, or 75 per cent. Moreover, Americans are attempting, with activity and persistence, to monopolize the consumption of the raw material which they produce, and to this end they multiply the spinning and weaving mills of their country, augmenting the number of spindles and installing their factories alongside the cotton fields. The consumption of American cotton in the United States grew from 2,287,000 bales in 1893 to 3,908,000 bales in 1903, and the progress appears to have been much more rapid since then.

"It is evident that the French cotton industry is menaced by death within a brief period if means are not found to remedy this situation. In order to supply the 6,150,000 French spindles and the 108,000 looms the French cotton industry pays each year for the raw material necessary more than \$57,900,000, which goes to the United States, India and Egypt. But even under these conditions the French industry finds ways of maintaining its position.

"It would be different should the United States succeed in consuming all the cotton which it produces. The 300 French spinning mills and the 650 weaving mills, besides the dyeing and finishing mills, would then have to close their doors, thus throwing into the street, deprived of the means of existence, 250,000 laboring people and producing an economic crisis of which the consequences would be disastrous.

"This danger may be met very simply by the full utilization of our colonial territories naturally adapted to the cultivation of cotton.

"Three of our colonies at this time are particularly favorable to cotton enterprise. They are Soudan, Dahomey and Madagascar and its dependencies. After a long and careful study of the question the Colonial Cotton Association has defined its program as follows:

"To develop and perfect the culture of cotton in the colonies where the natives lend themselves to it, and in all those where this textile is found.

"To study the modes of ginning and pressing compatible with the nature of the cotton and the local resources.

"To study the means of transport, and to endeavor to cause them to be increased and cheapened as much as possible.

"To engage the growers to ameliorate the quality of their product by buying better varieties and to aid in the creation of purchasing centers.

"To distribute selected native seed or exotic seed in villages, in order to obtain more highly improved species."

The Wave Theory in Commerce.

IN the course of a thoughtful article on the world-wide extension of American commerce the New York *Sun* points out that our share in the trade of foreign nations is susceptible of illustration by a series of wave-lines, the force of which lessens as the distance from our borders increases. "The rule," says the *Sun*, "holds good with only a few comparatively insignificant exceptions. On our north line lies Canada, to whom we sell 60 per cent. of all her imports. Northeastward, Newfoundland comes to us for about 37 per cent. of her needs. Southward, our immediate neighbor is Mexico. She obtains from our market nearly 60 per cent. of her importations. Southeastward are Cuba, buying nearly 40 per cent.; Hayti, taking a similar percentage; Santo Domingo, taking 55 per cent., and the British West Indies, coming for about one-third of their imports. In the next trade wave to the southward there lie the states of Central America, giving us collectively about 27 per cent. of their trade. Colombia and Venezuela give us each about one-third of their business. Following down the west coast, the rule holds good with Ecuador at 20 per cent.; Peru, 12 per cent., and Chili, 8 per cent. Along the eastern coast Brazil gives us 9 per cent.; the Argentine, 10 per cent., and Uruguay, 6 per cent.; while the interior countries are represented by Bolivia's 1½ per cent. and Paraguay two-thirds of 1 per cent. Looking eastward, England gives us 20 per cent. of her trade; Germany, 13 per cent.; Belgium, 10 per cent.; Spain, 9 per cent.; France, 8 per cent.; Italy, 9 per cent., and Russia, 2 per cent. Westward, Japan gives us 16 per cent.; China, 11 per cent.; the Philippines, 12 per cent.; Australia, about 10 per cent., and British India, about 2 per cent. The regularity of all this is more than a curious coincidence. It is probable that it is a correct indication of American trade conditions. We are not yet trade hunters in an active and energetic way, and proximity to these markets appears to be a strong factor in

the trade which comes to us almost without solicitation. Facility of transportation is evidently likewise a factor. The situation is at least suggestive of large trade opportunities by a little extension of commercial activity which would increase the force and volume of these wave lines."

Saltmaking in America.

INASMUCH as the United States of America now leads all other nations in the production of salt—last year's output exceeding 20,000,000 barrels—the processes employed in the State of Ohio, which is one of the richest sources of that staple, are worth a brief description. Wells lined with casing pipe are sunk down into the veins of salt water, about 1,500 feet below the surface, the diameter of the wells usually being six inches. Brine containing 25 per cent. of saline matter is brought to the surface by forcing water down one pipe by means of pumps, this water coming up in a parallel one, bringing the salt with it. The forcing of the water is necessary on account of the specific gravity of the brine. After being brought to the surface, the brine is piped to wooden vats, 120 feet long and 15 feet in width. Then after being freed from sediment it is conducted to vacuum pans, where by means of steam pipes heat is supplied from within, the brine boiling and vaporizing at a temperature of 120 degrees. The brine is made to circulate freely within the vacuum pan. With the concentration of the brine, the fine grain salt leaves the pan and is carried in its slushy form to bins, where it is drained. Later, in revolving dryers it is subjected to hot-air blasts.

By means of the cooling tower upon the roof of one of the salt-making establishments the same water is used over and over again in condensing the vapor from the vacuum pans. Water once used is carried to the roof at a temperature of 120 degrees. It first enters troughs 10 feet above the roof, from which it is later distributed to the roof beneath. It is returned to this pan at a temperature of about 60 degrees. Modern methods have revolutionized saltmaking until now the best grades, it is said, often contain less than one-half of 1 per cent. of impurities.

Industrial Progress in New Orleans.

ON the list of American cities most rapidly advancing in commerce and industry a prominent place must be awarded to New Orleans, La., U. S. A.

In foundry work, for instance, reports show that this has been an unprecedented year, not only in the amount of business done, but also in the character and importance of the work undertaken. Castings and moldings, which were formerly done in the north at a much greater expense than could be done at home, have been made in the foundries in the city. The workmanship and finishing have been equal to that done away. Already some large contracts in the way of machinery are planned for the coming year. An increase of 30 per cent. is considered a conservative estimate in the increase of foundry work. Some firms which a year ago were doing a \$40,000 and \$50,000 business are doing twice that amount, and the prospects are bright for a still further increase during the coming twelvemonth. This does not limit the work simply to repairing machinery, but includes the constructing of machinery for the equipping of sugar mills, sawmills, dredge boats, etc.

No better indication of the growth of New Orleans as a port can be found than in the ever increasing amount of repair work which is done to ships and water craft of all descriptions. It is conceded that any repair work, no matter what its character, could be done to battleship, tramp steamer or steamboat at as low a cost as at any other port. New machines have been added from time to time to the workshops, with the result that their equipments are equal to any emergency which might arise in the marine service.

Use of the Telephone.

TO show how extensively the telephone has entered into use in the United States of America, it may be stated that one company in that country has in use as many instruments as there are in all Europe. Two years ago there were in the vast Russian Empire fewer than 40,000 telephones. There are now double that number in the single city of Philadelphia, Pa., U. S. A. In the last two years one company has installed in America more than 500,000 telephones, a growth of almost exactly 50 per cent. There is to-day a telephone for every 50 persons in the United States. In all Europe combined two years ago there was only one telephone for every 368 persons.

The telephone is rapidly superseding the telegraph in every direction, because it is quicker. Last year there were in the United States thirty-seven times as many communications by telephone as there were by telegraph. The mail system of the United States has been so vigorously extended during the past few years that letter writing has increased enormously. Last year more than 5,000,000,000 communications were sent by post. But the telephone is rapidly creeping up to these stupendous figures, for there were last year two telephone calls in that land of hurry every time three letters were mailed.

To Measure and Utilize Fog.

AN American meteorologist has devised an instrument to collect fog particles and condense them into liquid in a rain-gauge, the object being to measure fogs and show their value to vegetation in regions where fogs are frequent and the rainfall is slight. The theory is approved by scientists, but one of their leaders holds that it would be difficult to ascertain from the catch of the "fog screen," which has been contrived, what would be the deposit of fog in orchards or how much of the water falls to the ground in such a way that the roots of the plants may utilize it, and that the chief benefit which delicate plants obtain from the fog is probably the protection which the fogs afford against the heat of the sun.

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Each bale of 6 Stearns and Foster Cotton Felt Mattresses measures 2 feet 6 inches deep, 4 feet 8 inches wide and 6 feet 6 inches long; about 75 cubic feet; gross weight, 282 lbs.

Each mattress is of STANDARD SIZE, 4 feet 4 inches wide, and 6 feet 4 inches long; weighing 45 lbs. Specify STEARNS AND FOSTER COTTON FELT MATTRESSES when ordering.

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Suitable for County Fairs, Parks, Plazas, Pleasure Grounds, or any
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Pays a larger dividend upon the amount invested than does any other known
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Cable Address: "Merrygoround," Tonawanda. Western Union Code.

Electric Locomotives on Standard Roads.

FOR suburban traffic from American cities, if not for longer runs, the electric locomotive is already a virtual certainty. One of the great railway companies whose lines radiate from the city of New York has contracted for thirty electric locomotives for passenger traffic on hauls of 30 to 50 miles. The biggest steam locomotive of this company has an indicated horse-power of 1,500, and can develop a speed of 60 miles an hour. The electric locomotives now building for the same system will weigh about 85 tons each, with an adhesive weight on the drivers of 67 tons, and will be capable of hauling a train of 500 tons at a speed of over 60 miles an hour. The locomotive will be a double ender, running equally well in either direction, and will have four motors of 550 horse-power each. The motors will have only two magnetic poles, instead of four, the usual number in railway motors, and the armature of each motor, instead of working through gearing, will be pressed solidly on the axle, having been previously assembled on a quill for this purpose.

Uses of the "Slot Machine."

WHAT is known in America as the "slot machine" is put to so many uses that its utility seems almost boundless. By dropping a coin of indicated value into a slot, one type of machine will serve the buyer with a quantity of chewing gum; another serves bars of chocolate; another serves postage stamps; another delivers a quantity of shelled nuts; another, with a combination of phonograph and megaphone, announces the correct weight of the person who steps upon the platform before depositing his coin. One type of machine contains a city directory which opens to the customer upon receipt of a cent; another produces a glass of iced water, and the slot principle has also been applied to gas meters whereby, when a certain sum of money is placed in the aperture, its equivalent in illuminating gas is made available from the mains, the supply being automatically shut off when the amount purchased has been exhausted. The newest use of the slot machine, however, is for serving prepared luncheons, and it is an unqualified success.

Pneumatic Tube in Postal Service.

PNEUMATIC-TUBE service for the rapid transmission of letter mail was formerly used in but one American post-office—that of New York City—but it is now gradually being installed in all cities of the first class in the United States. The power used is compressed air, the mail being transmitted in large, oblong boxes of leather, metal bound. Where hours have been required for the transportation of mail to and from the various stations, the pneumatic connections insure its delivery in minutes. Before the letter lying at the bottom of a mail bag received at one of the stations has been dispatched through the tubes, the first letter taken out of the same bag will have been assorted and started on its destination. Delays created by the accumulation of mail as well as by its slow transportation will be done away with.

Greatest Electric Power Station.

ONE of the most important of the various structures projected in the United States is the New York Edison Company's huge new power station, which is about to be built at an estimated cost of \$5,000,000. Upward of 10,000 tons of steel will be employed. The material will be rolled at the Carnegie Homestead mills and the American Bridge Company's Ambridge plant will complete the fabrication. The New York Edison plant will be equipped to produce about 112,000 horse-power. The machinery will include fourteen 5,500-kilowatt alternating current 40-cycle generators, to run at 6,600 volts each, to be directly connected to a steam turbine of about 8,000 horse-power capacity. Delivery on the steel will commence late in the spring, and the plant is expected to be completed by the last of next year.

American Exhibition of Motor Boats.

ARRANGEMENTS are being made for a great exhibition of American motor boats in connection with the annual Sportsmen's Show, which will be held in Madison Square Garden in New York, N. Y., U. S. A., from February 21 to March 9, 1905. It is intended that this shall be the largest exhibit of motor craft ever given in America, all the leading manufacturers of such vessels having agreed to take part in it.

Loss to American Fruit-Growers.—In the State of Georgia, U. S. A., this year more than 3,000,000 quarts of strawberries went to waste for lack of baskets in which to send them to market, and that, too, in spite of the fact that the number and output of the basket factories in the State were nearly 100 per cent. greater than in the year preceding. And notwithstanding the increased output of baskets, the price of quart baskets has advanced from \$2.50 per 1,000 in 1901 to \$5 per 1,000 in 1904.

Wood Alcohol from Yellow Pine.—Until recently it was not thought that yellow pine could be profitably used in the manufacture of wood alcohol, but careful experiments have shown to the contrary, and several extensive factories for that purpose are projected in the great pine belt of the State of Mississippi, U. S. A., one of them being already in operation. This means virtually the organization of a new industry in that State.

Nerve of the American Boy.

STRUCTURAL ambition as it appears in the United States of America in the erection of lofty edifices known as "sky-scrapers" has an influence quite unthought of in the beginning. That is, it develops courage, nerve, self-reliance and correct habits on the part of those employed in the work of construction. As an illustration, there is a boy 15 years old employed as water-carrier to the men at work on a lofty building in process of construction in the city of Dayton, O., U. S. A. He earns \$4.75 per day—really earns it—for, more than 100 feet above the street he runs about on the slender iron beams with the pail and cup, to refresh the men. The other day he met a workman on the same beam. This beam was probably not more than six inches wide, and the water boy stopped long enough for the workman to take a drink. The two stood poised in the air 100 feet or more from the paved street, and when the workman finished his drink, the water boy backed up the way he had come, while the workman advanced, and when they reached a point where they could pass, the workman went on to another part of the building. The water boy tripped gaily along, running and sometimes almost sliding from one upright to another, with nothing under him but a six-inch foothold to save him from a terrible fall.

Heroic Service for Humanity.

AMONG the unselfish and purely humane institutions of the United States there is none more beneficent or more effective than the Life-Saving service, which has for its purpose the rescue of ships, men and cargoes imperiled by the hardships of the sea. This service employs more than 2,000 hardy and experienced sea-faring men, divided into crews of six or seven men for each station, and these watchful outposts of humanity stretch from Quoddy Head on the North Atlantic to Cape Disappointment on the North Pacific, as well as along the shores of the Gulf of Mexico and the Great Lakes. Since this splendid system was established in 1871, the Life-Saving Service has attended 14,076 disasters, involving 102,474 lives, of which only one in 100 has been lost; while of property imperiled, to the amount of more than \$210,000,000, over \$166,000,000 has been saved. The cost of maintenance of the Service for the last year was \$1,721,727, which is less than one-fourth the amount of property saved during that time, and not so much, by \$200,000, as one-fourth the estimated cost of the latest type of battleship ready for service.

Completion of a Great Tunnel.

AFTER three years of labor, day and night, employing 1,000 workmen, the great Santa Susana Tunnel on the Southern Pacific Railway in the State of California, U. S. A., is completed. This tunnel, 8,000 feet in length, saves six miles of mountain climbing for trans-continental trains, and is the third largest tunnel west of the Rocky Mountains.

The tunnel is about thirty-five miles northwest of Los Angeles, Cal., and was begun in 1900. The work was prosecuted from both sides of the mountain, and at each opening was established camps to accommodate the workmen. Electric-light and air-compressing plants were installed in each camp. The drilling and hauling away of the debris was done by machinery driven by compressed air. The escape of air from the drills furnished fresh air for the men engaged in the work. So complete were all the arrangements that few accidents occurred during the entire work. When the two working forces met there was less than a foot difference in their lines.

Age Limit for Employees.

THE demand for young men in American industries is illustrated in an order issued to all heads of departments in the vast plant of the Carnegie Steel Company at Pittsburg, Pa., U. S. A., instructing them to employ no man over 35 years of age in certain departments, and extending the age limit to 40 in others. The rule does not apply to laborers. The order affects a large number of the most expert steel men. During the last few years numerous new steel plants have been erected and tempting offers were made to the old and most expert employees. In many cases the new offers were accepted. The recent reaction in the steel and iron industry left many of these plants idle. This, coupled with the universal resumption of the Carnegie mills in the Pittsburg district, enticed hundreds of these men back to their old homes, only to meet the discouraging statement that no man over 35 years would be employed.

Electric Aids for Actors.—In nearly all the newer theaters in America electrical appliances are put in the dressing rooms to assist actors and actresses in their make-up as well as to insure protection from fire by discontinuing the use of gas. From time immemorial actors have warmed up their grease paints and heated their curling irons over gas jets. The flame was surrounded by a small wire screen, to prevent wigs from catching fire. Just above the dressing table is a nickel-plated box, shaped like a flat cigar box turned on end. At the bottom are racks for holding and heating curling irons, and on top indented pans for melting grease paint and cosmetics. A little key at the side turns the current on and off.

Wage Losses in a Strike.—It is estimated that the recent strike of men employed in the building trades in the City of New York, N. Y., U. S. A., involved a loss in wages of \$3,320,000.

The Silver Manufacturing Co.

373 Broadway, Salem, Ohio, U. S. A.

MANUFACTURERS OF

"Dole" and "Silver" Hub Boxing Machines.
 "Star" Hollow Angers, "Dole and Deming."
 Spoke Tenon Machines, "Silver's" Band Saws.
 Portable Forges, "Silver's" and "Advance."
 Blacksmiths' Drills, Hand or Power.
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 Metal Bucket Chain Elevators and Root Cutters.

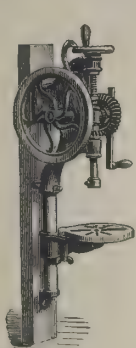


Fig. 742. No. 12.

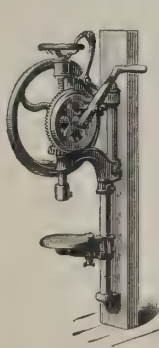


Fig. 731. No. 1.



Fig. 732. No. 2.

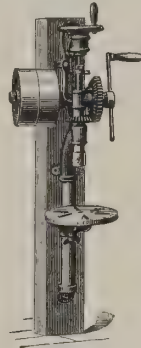


Fig. 746. No. 12.

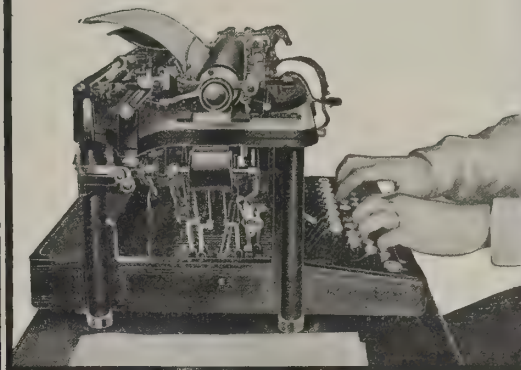
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WE HAVE 10 OTHER SIZES.

They are reliably constructed, light-running and work perfectly.

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of Service

always proves the absolute
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 CORRESPONDENCE SOLICITED.

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 elsewhere.

AMERICAN AIMS AND HOPES.

International Arbitration.

INASMUCH as the President of the United States has announced to the representatives of the Interparliamentary Union, recently assembled in the United States, that he will shortly invite the great Powers to join in another conference at The Hague to consider additional measures for the promotion of international arbitration, it is interesting to note the progress which has been made in that direction since the first conference assembled at The Hague in 1899. The conference established the International Court of Arbitration, and the first two cases submitted to it were taken there on the initiative of the United States—the first involving a long-continued dispute between the United States and Mexico over certain church funds in what is known as the Pius Fund, the second involving the right of England, Germany and Italy to blockade the ports of Venezuela as a means of enforcing the payment of unadjudicated claims against Venezuela.

Shortly after the first conference at The Hague, the Boer war in South Africa began, the Filipino insurrection took an aggravated turn, and France had her difficulty with England about the Fashoda affair. But soon before the end of the Boer war, the five-year treaty of alliance between England and Japan was signed, which bound the two countries together in war, if either should be attacked by two enemies. Then came the extension of the Franco-Russian agreement to the Far East, and a renewal of the Triple Alliance of Germany, Austria, and Italy. Yet these were all military conventions as different in their purpose and scope from what the Tsar had proposed as was possible, and on February 8th, of this year, the war between Russia and Japan began.

But, while this terrific combat has been going on in farther Asia, Europe has been kept busy making treaties of arbitration and settlement of old difficulties, and the general movement toward arbitration has had a strong impetus. Turkey came to an understanding with Bulgaria and with Greece. Italy has made a new treaty with Austria. Just recently, Germany and Russia are believed to have settled the preliminary negotiations for a new tariff treaty that will do much to lessen friction between them. But the most important series of treaties has been that which England has concluded with France, Italy, Spain, and Germany, and that France has concluded with Italy and Spain, by which these countries are bound to submit to The Hague Tribunal differences which fall into certain of the commoner classes of international disagreements. Thus the Tribunal has become something more than a fabric of the egotistical dreams of the Tsar.

An agreement has been made between Holland and Denmark which is interesting because it is probably the first agreement ever reached between two independent nations by which they bind themselves to absolute and unlimited arbitration of their international misunderstandings. But the most important of all these treaties has been the Anglo-French treaty, not so much because of the settlement of many colonial and other difficulties, but because it has brought these two countries so close together and made such a good understanding between the two greatest sea and colonial powers in the world.

The obvious tendency of the agreements thus briefly outlined is toward a rearrangement of world power along lines which shall lessen the likelihood of war by making it increasingly dangerous to the nation which begins it. In other words, they mean that the great Powers are animated by a high desire to safeguard "commerce, the calm health of nations."

Wages in America and in Europe.

IT is an interesting circumstance that the last five years have witnessed not only a shortening of the hours of labor but a rise in wages, both in the United States and Europe, although these changes are more marked in America than in the Old World, wages being much higher and the working day much shorter in the United States than elsewhere. These facts are strikingly presented in a current report from the United States Bureau of Labor and Statistics. This report shows that the average working day for eleven trades—boiler-makers, machinists, brick-layers, carpenters, compositors, painters, plumbers, iron-molders, stone-cutters, hod-carriers and common laborers—is nine hours in the United States, eight and a half in Great Britain, ten in Germany, and between ten and eleven in France and Belgium. The average hourly wage of these trades in the United States is 35.1 cents, 17.3 cents in Great Britain, 10.5 cents in Germany, 13 cents in France and 6 cents in Belgium. In other words, wages are more than twice as big in the United States as in England, three times as big as in Germany, and nearly six times as big as in Belgium, which, in proportion to its size and output, is probably the greatest manufacturing country in the world. The American common laborer receives higher wages than the skilled German or French workman, and almost twice as much as the skilled Belgian.

The most significant fact about American wages is the purely arbitrary way in which they vary with trades which require practically the same degree of skill and ability. Brick-layers, for instance, receive twice as much an hour as machinists. Probably this difference is due to the activity of the unions in some of the trades in which there is such increase. For, in the European countries, there is very little difference between the wage-levels of the various trades, and the wages of common laborers more nearly approach the wages of skilled workmen than in the United States.

But the most important fact shown by these comparative statistics is the great superiority in the mechanical equipment of the American workman.

To Convert Peat Into Coal.

IT is claimed by an engineer living in Chicago, Ill., U. S. A., that he has devised a process whereby marsh mud can be converted into coal and made ready for market within half an hour after it is taken from the bog. According to a statement published in the *New York Herald*, peat treated by this process shows a heat efficiency equalling that possessed by the higher grades of anthracite coal. Chemical analysis has shown a combination of hydro-carbons and volatile substances giving thorough combustion; physical analysis has shown a specific gravity, in some cases exceeding that of hard coal, so that a ton of peat fuel will take no more room in the cellar than is required for a ton of coal. The peat fuel can be produced at less than 90 cents a ton.

There is nothing new in the idea of utilizing peat, the soil that covers thousands of acres of waste land throughout the United States to the depth of three or four to fifty feet, as fuel. The trouble has been to find a process economical enough to make it an article of commerce. The elimination of moisture in the raw product has been one problem. Another has been the compressing of the dried peat into blocks that would withstand the weather and not disintegrate in shipment.

These problems, it is said, have now been solved. A centrifugal separator for the removal of part of the moisture at a low cost and a drier that reduces the remaining moisture to approximately the percentage contained in anthracite coal, have overcome one obstacle. The other improvement, wherein the commercial value of the finished product rests, has to do with the compressor that packs the ground peat into blocks for the market. In the systems heretofore employed the peat briquettes have been formed by a fixed pressure, which has not given them sufficient density. By the system demonstrated here the density sought is obtained by a yielding pressure—an impact and a slide by a ram of great power.

This combines the atoms and molecules of the peat particles and gives them a chemical combination like that of coal dug from the ground. The sliding pressure, aided by steam heat on the outside of the cylindrical jacket through which the fuel cubes pass, also forces the natural tar and paraffine in the peat—six pounds of the former and two pounds of the latter to the hundred pounds—into a glazed exterior that renders the block impervious to moisture. Practical tests have shown that there is none of the waste, through smoke and escaping gases, in the use of peat fuel that attends the use of hard and soft coal. There were no clinkers and the percentage of ashes was much lower than with coal.

One of the most interesting tests was made with an ordinary cook stove. A fire was built with four pounds of kindling and six pounds of hard coal. A thermo-gauge was placed in the oven and readings made at regular intervals through a peephole. When the fire had died out and the stove was cool another fire was built with four pounds of kindling and six pounds of peat briquettes, and readings were again made. They showed that the average heat obtained was 10 per cent. greater with the use of peat, while the duration of effective heat was 20 per cent. greater.

The Largest Traction Engine.

WHAT is described as the largest traction engine in the world has just been completed by a firm in the State of California, U. S. A. The engine, of 125 horse-power, is 17 feet high and 15 feet wide from outer edge to outer edge of its enormous wheels, and can climb a 25 per cent. grade carrying 20 tons. The engine tanks hold 600 gallons of water, sufficient to last for a distance of six miles, and an additional 600 gallons can be carried on the front part of the first wagon. As many tanks as desired can thus be added, but, as their weight detracts from the hauling power, it is considered advisable to replenish the water supply every six or twelve miles.

Tests have demonstrated that this ponderous machine costs but \$18 a day for operation. Oil, coal, and wood can be used for fuel with equally good results, without altering the fire box. An oil-burning attachment is furnished when oil fuel is desired. To operate the train requires an engineer and fireman. When freighting in the mountains, however, a third man may be required to attend brakes when descending steep grades, and also to help load and unload the train. Engines of this type, but of smaller size, are used throughout California and the Pacific coast, in hauling logs, lumber, and other kinds of material, some of the large milling companies in that part of the country including in their equipment as many as five or six of them.

New Pleasure Vehicle.

AMONG the newest American vehicles is the auto-chair, which is called the successor to the automobile. It first appeared at the St. Louis Exposition, and, because of its convenience, neatness, and simplicity, at once sprang into favor. It is destined soon to be seen in large numbers on the fashionable streets and boulevards of New York and Chicago. By many this new type of vehicle is already proclaimed the automobile's successor. It can be manufactured much cheaper than the automobile, and for shopping and light usage it has no equal. The chair takes the form of a low phaeton without a cover. There are four wheels—two large rear wheels, and two small ones under the foot rest. All are pneumatic-tired. The seats are upholstered in cane like those in street cars. Behind the seat is a box which contains the batteries that furnish the motive power.

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 3/4 cubic feet. This cut represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/2 inches deep and 32 1/2 inches long. Made of selected quarter-sawn oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of Lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent, on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

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Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warehouses, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



Top Section

List, \$3.00

9 1/4" Section

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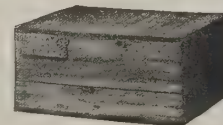
13 1/4" Section

List, \$5.25

Base Section

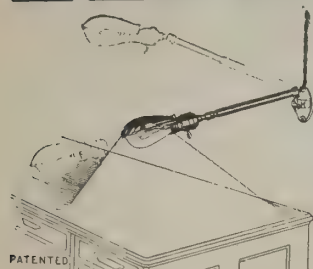
List, \$2.65

SIX-SECTION CASE.

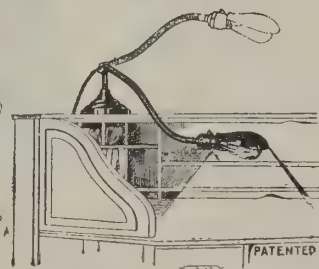


Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warehouses and on shipboard.

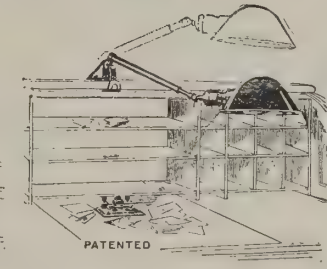
ELECTRIC LIGHT FIXTURES



Style No. 40.



Style No. 50.



Style No. 30.



Style No. 1.



Style No. 290.

By the use of the fixtures illustrated above the electric light can be adjusted to any conceivable position. The arm is telescopic and extendable, and is mounted on a ball-bearing friction joint. They are without question the most adjustable, practical and durable fixtures on the market.

WRITE FOR CATALOGUE AND DISCOUNTS.

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ESTABLISHED 1866.

Paints and Varnishes OF ALL DESCRIPTIONS



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ROOFS, BRIDGES,
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WHITE LEAD,
COLORS,
ENAMELS, STAINS,
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MARINE PAINTS, Etc.



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PARQUET FLOORS AND FLOOR FINISHES,

Also Floor Wax, Powdered Wax, Wax Oil for Kitchen Floors, Surface Renovator and Weighted Polishing Brushes.

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AMERICAN TECHNICAL ARTS.

Railroad with One Rail.

AMERICAN capitalists have organized the Monorail Company and are preparing to make practical tests of a new system of railroad having a single rail. It is known as the Tunis system and the following description of it has been prepared by the inventor, a resident of Baltimore, Md., U. S. A., where the tests will be conducted:

"The fundamental principle of the monorail system lies in having the center of gravity as close as possible to the weight-bearing tee-rail. When this condition is fulfilled there is but little lateral force needed to keep the car in an upright position. For this reason, and also to overcome resistance to the elements, the car will be built of steel covered with veneer or pressed fiber. This makes them strong and very light, and also places most of the weight within a foot of the rail.

"The Tunis monorail patent covers a long, narrow car, running on a single tee-rail. This is spiked to the ties in the usual manner. The car is held in an upright position by means of two angle iron guide rails overhead, on which run flexible overhead trucks on the top of the cars. It is practically impossible to remove the car from the track without taking the structure apart. By a system of springs attached to the trucks, these adapt themselves to any irregularities on the trolley bars.

"That the monorail will ultimately rival the present railroad system is obvious. Take for instance, the case of a car resting on two rails; where the center of gravity, of course, falls between them. In order to keep on both rails, with the car going at full speed, it is necessary that the car be very heavy. In the monorail the center of gravity is over the rail, and consequently the car can be built as light as is deemed consistent.

"The moment we solve the building of light cars that moment we find the cost of these cars reduced to about one-half, and the weight to about one-third. By reason of this reduced rate we are able to save on all items of construction and on account of the extreme lightness of the cars, grades will make but little difference in power, maintenance, or speed. The monorail car can be very light without interfering with absolute safety. This lightness means the consumption of less power at all speeds, lesser powers to climb grades and quicker control of cars on grades. There is but little more friction on a curve than on a straight track.

"It will be perfectly safe to run cars around 20-degree curves at a rate of 60 miles an hour, and on curves of 10 degrees or less at an average speed of 120 miles per hour. With the monorail it will be practical to operate trains on all grades during snow or sleet, with much more efficiency than can be obtained from any known type of trolley car.

"The means of locomotion will be electricity, and as the guide rails conveying the current are very strong, they will not break as trolley wires often do. For this reason high currents can be employed, using these rails as conductors without risk of danger to life.

"One of the disagreeable features of railway travel to-day is the oscillation of cars on the roadbed. In going around a curve the average car rolls and jerks until a delicate passenger experiences the effects of seasickness. All this will be done away with in the monorail cars, however, as the mechanism of the car and track is such that swaying and jerking will be entirely eliminated."

Compressed Air in Breaking Salt.

AMERICAN manufacturers, packers and chemists using large quantities of salt have had difficulty in handling that staple for the reason that when stored in large quantities it is likely to cake or harden, especially if the surrounding atmosphere is moist. When stored long in such places, in beds twenty feet deep, as is often the case in America, the salt becomes so hard that it has to be broken with picks or axes. Recently, however, a new device has been used to break the salt masses so that the material can be handled easily. The implement is a large boring tool operated by compressed air. The auger is mounted on a wheeled truck which is guided by handles projecting from the rear of the framework. The rear end of the auger revolves in a socket fitted into the framework, while the air is admitted to the socket from the hose which supplies it. When operated, the boring tool is pushed against the mass of salt, and the auger is set in motion; and in a minute or two—so rapidly does the tool work—a hole about five inches in diameter is made in the formation the entire length of the auger. Then another hole is drilled parallel with the first, and another, until the pile has been undermined, so to speak, when its contents can easily be broken out. The advantage of this method is seen when it is stated that two men can get out as much salt by the power method as two dozen men by using picks and shovels.

Theater Curtains Moved by Electricity.—One result of the search for safety appliances following the dreadful fire tragedy in the Iroquois Theater in Chicago, Ill., U. S. A., is seen in a combination steel and asbestos theater curtain, as stanch and fireproof as the proscenium wall itself, which has to be operated by electric power because of its excessive weight. The power apparatus for raising and lowering the curtain has proved so efficient and convenient that theater managers now wonder how they ever tolerated the old system of hand-power curtains.

The Life of a Locomotive.

MODERN economies have compelled American railway companies to compute the average endurance-period of locomotives as carefully as life insurance companies compute the endurance-period of the applicant for a policy. Taking a locomotive which has a normal career and wears out by use, instead of being destroyed by accident, its "life" value can be measured with reasonable accuracy by the results of experience. These results show that the active life of a locomotive is about twenty years, and that if the locomotive cost \$15,000 to begin with, at least twice that sum will be required to keep it in repair during that period.

Everything possible is done to keep the engine in commission, until at last a stage of decrepitude is reached that seems to preclude further repairs. At this point it is a question of "scrapping" the locomotive, or of selling it for about \$2,500 to dealers in second-hand equipment, who will repair it for about as much more and sell it to a logging or similar road, where it may do service for several more years.

An old locomotive is worth as scrap from \$500 to \$2,500 as the case may be, the difference being due to the availability of the various parts for further use as such parts. When the engine is turned over to the scrappers it presents a disreputable appearance, far removed from that of the days when its first engineer looked it over. Once dignified as "she," "old kettle" or "mess of junk" are now the most respectful epithets applied by those who have to do with its operation. Even in the days of scrapping, careful management guards against wastefulness. Steel, brass and iron are taken off separately; everything usable is saved out; and frames, axles and good parts are set aside for further use. What is left goes to the scrap bins and eventually to the foundry or the junk dealer.

Generally speaking, railroads prefer to sell their old engines and cars, if possible, and save the expense of scrapping, which naturally is considerable. That is why a number of concerns do a profitable business in old rolling-stock, and there is a demand from small railroads or self-contained lines for engines and cars which the trunk lines do not think it profitable to keep in stock.

Educating Engineers and Firemen.

ONE of the foremost railway companies in the United States has instituted a system of training locomotive engineers and firemen, which promises to be exceedingly useful alike to the company and its employees. Briefly described, the system is as follows: In the first year of his service, a fireman gets a book of rules, which pertain wholly to the mechanical and fuel phases of a locomotive. At the end of a year he is examined in the subjects contained in the book, and if he fails is dropped from the service altogether. A similar course is pursued the second year. At the end of the third year, he must attain an average of 80 per cent. in the three years' course. Before he gets a diploma as a qualified engineer, however, he must attain 100 per cent. in the subjects prepared by the examining board.

Rapid Track Laying.—A new track-layer is in use in railway construction in the United States of America which, with a crew of forty men, will lay two miles of track a day. The track-layer has a huge crane, sixty feet long, which projects forward over the road and hauls behind it a train of sixteen flat cars loaded with ties and rails. A continuous double line of the latter moves constantly over rollers and carries the ties with it. Both rails and ties are seized at the proper time by the machinery and placed on the road in front of the train, where they shortly form part of the track over which it passes. This device is said to be the most expeditious as well as economical track layer in the world.

Automobiles on the Farm.—With the increasing ease of farming operations in America the use of automobiles in agriculture is a foregone conclusion. An instance is found in a machine contrived by an enterprising farmer in Franklin County, Ohio, U. S. A. This machine, which has displaced horses in many lines of work, is an auto-traction engine so fitted that it can be hooked to two plows, a corn planter or other farm implements, and when occasion requires it can be converted into a wagon for hauling. It can also be used to operate a thresher, a pump or a drill. The engine of this machine is water-cooled. It is 10 horse-power, but the gearing is such that the actual power developed at the wheels is equivalent to 40 horse-power.

New Lining for Refrigerator Cars.—A new variety of lining for refrigerator cars recently placed on the American market is attracting attention for the reason that, while it possesses the insulating properties of hair felt, it combines the papers used in connection therewith, so that, instead of involving three operations, the new article can be applied in one. It consists of regular felting hair fastened to and enclosed by two layers of waterproof paper. Tests are said to have demonstrated it to be equal to hair felt. It is furnished in lengths sufficient to reach around a car, and wide enough to extend from the sill to the roof plate. This does away with joints.

Tested in a Practical Way.—In order to test a cultivator of his own make, an American manufacturer of farm implements recently placed his wife and 4-year-old child in the vehicle and substituted himself for a horse for a 300-mile journey. The trip was made successfully in three weeks, the owner, his family and the vehicle arriving in perfect condition.

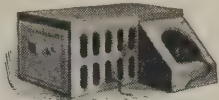
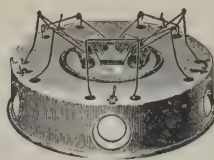
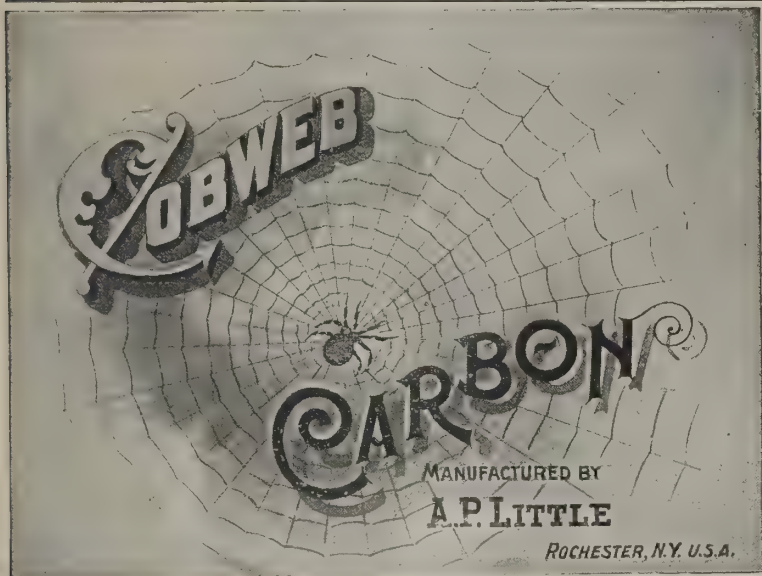
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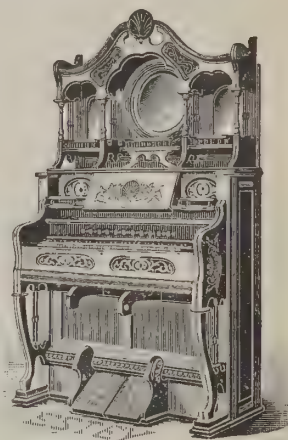
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AMERICAN PRODUCTS ABROAD.

American Cars for Argentine Railroads.

ONE of the largest, if not the largest, single orders for railroad rolling stock ever placed with American manufacturers was closed by cable on the last day of August. It comprises 640 freight cars for the Argentine Government railways. Another order for thirty-eight passenger, sleeping and baggage cars was closed at the same time, and was also for the Argentine railways.

Delivery of the freight cars will be begun next month and of the others in the early part of next year. The fact that these orders were secured in open competition with British, German and Belgian manufacturers may be regarded as a substantial recognition of the reputation enjoyed by American makers of these products in the markets of the world, and that reputation is by no means lessened when it is considered that the company securing the order for these freight cars had already furnished a considerable number of cars for the Argentine Government railways, and its managers believe the satisfactory work done by those cars had much to do with their securing the new order.

During the last two months there has been a decided increase in shipments of American railroad materials to foreign countries, especially of rails, many of which have been shipped from Philadelphia to the southern republic, where considerable work has been done in the last year or two. The fact that the United States is getting this business can only mean that American manufacturers are able to sell products not only of superior quality, but at a price low enough to secure contracts.

Reciprocity Treaty with Canada, Perhaps.

A WELL-INFORMED correspondent at Washington, the capital of the United States, says: "The remarkable change of front of Senator Henry Cabot Lodge, of the State of Massachusetts, on the subject of reciprocity with Canada, as evidenced by his recent conciliatory speeches in reply to the demand of Massachusetts interests for closer trade relations with the Dominion, together with the recent publication by the Department of Commerce and Labor of an elaborate monograph on the trade of the United States with Canada, have given rise to a great deal of speculation as to whether the Administration is planning to include a reciprocal trade agreement with the Dominion in the general scheme of tariff revision which, it is expected, will be undertaken by the Fifty-ninth Congress, to be elected next November.

"Notwithstanding our somewhat strained commercial relations with the Dominion Government, our exports to Canada have continued to increase, and the most conservative and far-seeing public men are beginning to feel that a reciprocity treaty with Canada will be necessary in the very near future to prevent the adoption of measures that would constitute a much higher barrier against American products than the existing tariff with its preferential rates in favor of Great Britain. In ten years our total commerce with Canada has more than doubled, amounting in 1903 to \$209,389,000, of which \$71,784,000 were exports to the United States, and \$137,605,000 imports from the United States. The increase since 1873 of the imports into Canada from the United States has amounted to over 188 per cent., while the exports from the Dominion to the United States have risen a little more than 70 per cent."

Peanut Oil.—All signs indicate an increased output of peanut oil in the United States this year. This oil is entering more and more largely into the manufacture of fine toilet soaps and also for use as a lubricant in America as well as in Europe. The meal that is left after the oil is extracted from the peanuts is sold for cattle feed, as which it is keenly appreciated. Marseilles is the great market of the country for the peanut oil and meal. Before pressing the peanut, the kernels are freed from the red cuticle by a winnowing process. Some Americans who have experimented in manufacturing the oil, pressed this red skin and the nut together and as a result the oil was extremely bitter. Often the nuts are subjected to three pressures, but the best oil comes from the first pressure.

Our Fruits in Demand Abroad.—Exports of fruit from the United States in the fiscal year 1904 will exceed \$20,000,000, against less than \$3,000,000 in 1894. The growth in the exportation of fruits from the United States has been very rapid during the last few years. Apples, oranges, apricots, prunes, and raisins form the principal items in the exports of fruits. The exportation of prunes from the United States has grown very rapidly. Germany, France and the United Kingdom are the principal customers for this class of American fruit. Raisins are also becoming an important feature of the export trade in fruits.

American Torpedo Boats, for Whom?—Mr. Lewis Nixon, a prominent American shipbuilder, returned to New York from Russia a few weeks ago and when he arrived it was stated in the newspapers that he had contracted to build several large warships for the Russian Government, but that statement was promptly denied. Since then the frames for ten torpedo boats have been laid in his shipyard at Perth Amboy, N. J., U. S. A., and it is said that frames for sixty additional are under construction. Mr. Nixon will not say for whom these boats are building.

Demand for Machinery in Japan.

A JAPANESE correspondent of the *British Trade Journal* writes to that paper that "as there are hundreds of thousands of Japanese forming an important section of the productive population now engaged in the war, Japan must rely more and more upon such members of the community as have hitherto been enjoying an idle life, living on the incomes of their families or on their family estates. Young and old must become producers and must be provided with some suitable occupation. This makes it imperative that Japan should improve its domestic industry, and putting away the time-honored ways of hand labor, utilize machinery in many branches of domestic industry. These include knitting, umbrella-making, envelope-making and similar occupations. Machines for this work are not only simple in construction, but easy to manage and clean to handle. Some of them can be worked by members of well-to-do families with considerable interest and profit. It is a great pity in our country that people above the middle class are in the habit of living idle lives on their family estates, but they will no longer be allowed to despise labor, and they will be bound to engage in business for the general benefit. When rich and poor all become producers there will be a stimulus to the use of all kinds of mechanical appliances adaptable for home industries.

"It is a question still unsettled whether the factory system is more suitable to the Japanese than the domestic or home industry method. From an historical, geographical and monetary point of view, the latter has many advantages, though it may be taken for granted that the former is more profitable. But even then Japan can to-day hardly compete in extent with the factory system of western countries. It seems preferable, therefore, to keep to their own system of home industry for the time being and to improve it by utilizing mechanical power. For instance, Japan's exports of porcelain, lacquered ware and Japanese paper increase year by year, yet they are at present made only by hand. The authorities concerned have now come to study the use of machinery in these branches of trade, and we hope they will meet with success. If machinery is imported for home industries our exports will be free from the defects of variation in articles made only by hand, and there will be less difficulty in carrying out large contracts."

Charles M. Schwab to Emulate Carnegie.

CHARLES M. SCHWAB, the American who made millions in steel, intends to emulate Andrew Carnegie and try to die poor. He recently told a reporter how he is going to get rid of his wealth. He thinks there is no essential credit in dying rich; said he was not qualified to talk about philanthropy, but was willing to tell how he expects to part with his fortune.

"You see," he went on, "it is a harder thing to spend money than most folk imagine—that is, to spend it in the right way. Industrial pursuits are my hobby, not only industrial schools for boys and girls of sound body, but where the cripples and deformed children may learn some useful occupation. I have observed during my connection with the steel industry that nowadays the young men have an ambition to get out of manual labor work with the hands and become engineers, electricians and professional men. The crying need of to-day is that young men be taught some useful work to do with their hands.

"I believe the time will come when industrial training will be taught in every public school. The State will take it up. I am a Roman Catholic, but I am a strong believer in public schools. I don't believe in parochial schools. Why, down in Homestead in the industrial school I established pupils from the parochial schools are not admitted. Boys and girls who go to schools are taught nothing but books; they don't get the opportunity to learn how to do things with their hands, that which will be of practical value to them in earning a competence.

"Our most useful men are not the ones with the most intellectual training, but those who know how to do something of some kind of work with their hands. Our best-educated men are those who started after going through school to educate themselves. When we combine education with a knowledge and desire to do manual labor we have the elements of success.

"Mrs. Schwab and I have spent hundreds of thousands—yes, millions of dollars—at Richmond Beach, New York. Never heard of that, did you? We did that very quietly. Our object was to teach crippled and deformed boys and girls useful occupations, but the storm of public criticism got so severe that we have decided not to do anything more just now. We'll start again some day."

Merely a Matter of Shoes.—The laying of the cornerstone of a new shoe factory in England a few weeks ago was made the occasion for a fine display of local pride, the mayor and other officials joining in the ceremonies. All of which is a reminder that the American manufacturer of shoes is so busy that when he wants to enlarge his factory he does it as speedily as possible, without fuss or frills. One of the leading American firms of shoe manufacturers recently sent out eighty traveling representatives with samples for the new season. Based on last year's records, these eighty salesmen will receive this season orders averaging \$100,000 each.

American Threshing Machine in Damascus.—An American threshing machine imported into Damascus by a rich Moslem landowner is paying large returns on the investment in rentals for its use among the peasant farmers.

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In THREE Sizes:

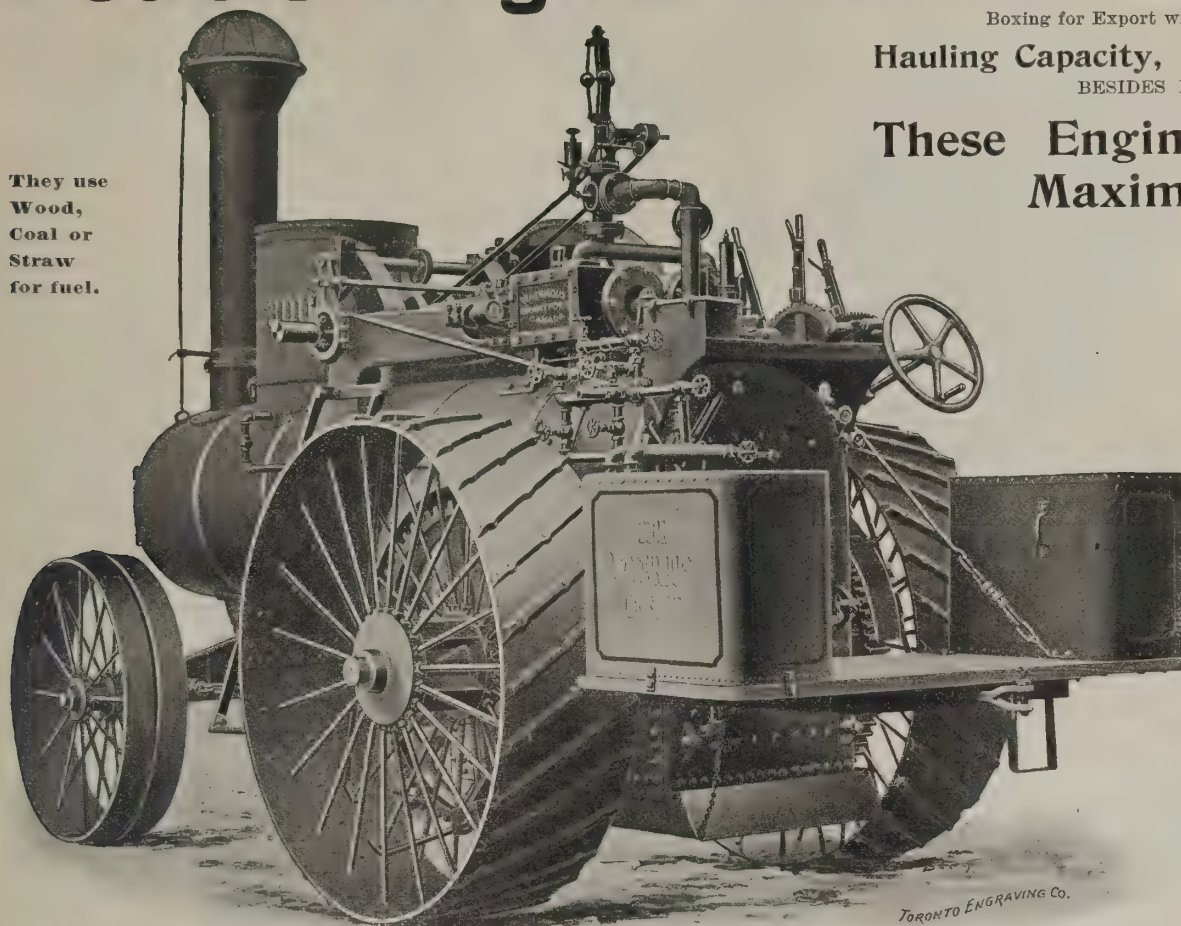
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These Engines Always Give
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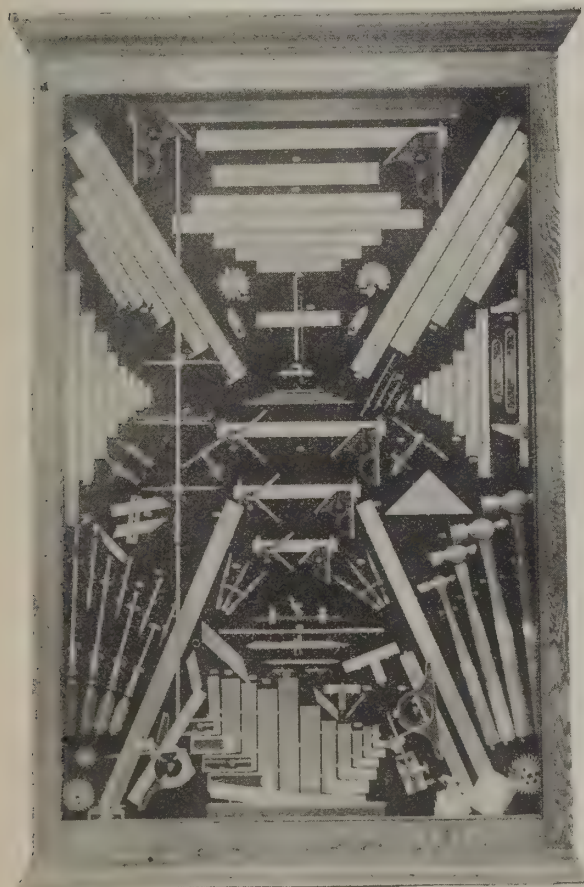
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TENDENCIES OF COMMERCE.

Free Ports of Entry on the Isthmus.

THAT the United States Government is fully resolved to safeguard the trade opportunities that will arise from the construction of the Panama Canal is shown by the announcement of Rear Admiral Walker, Chairman of the Panama Canal Commission, that the United States will open and maintain two free ports of entry in the canal zone. One of these ports will be Cristobal, near Colon, on the Atlantic side of the Isthmus, and the other will be Ancon, near Panama on the Pacific side. It is intended that all goods meant for public or private use in the canal zone shall enter through these ports, the fiscal affairs of which shall be administered by the United States, with the understanding that no goods imported into the zone will be allowed to enter the territory of the Republic of Panama save on terms prescribed by that government.

The maintenance of a free port at each end of the canal is obviously a plan of commercial necessity. The construction of the water-way will involve the importation to the isthmus of scores of millions of dollars worth of materials and goods of every description, and besides that it will bring into the canal zone an army of foreign laborers over whom the United States is pledged to exercise supervision and police power. It is vitally necessary, therefore, to establish a system of administration which shall be simple, thorough, efficient and economical and so adjusted as to promote the development of trade while affording the amplest protection to the mutual interests of the United States and the Republic of Panama. An indispensable feature of such a system is a business-like control of the customs service at both ends of the canal which, in the very nature of things, must be exercised by the United States. Now, the cities of Colon and Panama were specifically excluded from the territory in the canal zone ceded to the United States by the Republic of Panama, consequently, in devising regulations for trade entering the zone the United States had to do one of three things. It could turn over the whole customs service to the authorities of the Republic of Panama, or it could adopt the equally anomalous and more difficult policy of enforcing American customs regulations in the foreign cities of Colon and Panama, or it could establish free ports of its own at each end of the canal. The latter course was manifestly the easiest and most practicable and the one best calculated to protect the colossal interests involved in the canal project. In adopting it the United States Government has insured a stable and efficient administration of the fiscal affairs of the canal zone and laid the basis of a commercial policy which is bound to contribute largely to the trade development of the isthmus.

Some interesting information as to conditions and prospects in the Republic of Panama is contained in a report recently forwarded to the State Department by Mr. H. A. Gudger, United States Consul General at the city of Panama. He estimates the area of the new republic at 31,500 square miles and the population at 300,000 including 40,000 Jamaica negroes, 2,000 Chinese and large tribes of Indians who are still in a state of savagery. The interior forests are rich in hard woods, and it is believed that the hills contain enormous deposits of valuable minerals. One of the greatest needs of the country is wagon roads leading from the coast into the interior. There are at present not more than twenty-five miles of passable roads in the whole country, and the construction of such highways is indispensable to the development of the natural resources of the territory. With the inflow of American capital, however, Panama is bound to experience a decided boom as soon as the work of canal construction begins in earnest. "From Panama and Colon," says Mr. Gudger, "there are various steamship lines running to the different ports of the world. The service of both ports is either weekly or trimonthly, and the lines operated by companies that are able to furnish the very best of accommodations to their passengers. It is confidently expected that a fast line of steamers will be operated between New York and Colon, and it is more than probable that another will be established between Mobile and New Orleans and Colon."

America's Invitation to Europe.

AS showing the sincere desire of American producers and manufacturers of cotton that their activities shall be properly understood in Europe, special interest attaches to the following resolution unanimously adopted by the American Bankers' Association in annual convention in New York City on September 16th: "Bankers from the cotton-growing States attending the American Bankers' Convention having heard that it might be possible to induce the cotton manufacturers of Great Britain and the Continent of Europe, either as an organization or as duly appointed delegates, to visit the United States and make a personal study of the cotton growing and manufacturing possibilities of the South, at a special meeting held for that purpose desire by this resolution to express their earnest hope that the spinners of Europe may visit this country this fall, promising on behalf of every business interest a hearty welcome."

Art in Shoes.

SOME of the new styles of women's shoes recently produced by American makers are particularly attractive. There are plum-colored ones, for instance, which are of the richest and most beautiful shade imaginable, and are accompanied by stockings which match so perfectly that no artistic eye will be hurt by a discrepancy such as sometimes exists between colored shoes and hosiery worn with it. Besides plum-colored shoes, there are lovely green ones, of the shade so fashionable last summer.

Coming Opportunities in China.

PROBABLY no other foreign country offers to-day, or will continue to offer for the next twenty-five years, such an attractive field for the exploitation of American enterprise as now exists in China. That ancient empire, with its 400,000,000 of population, is at the threshold of a tremendous revival, physical, industrial and military. In fact, the movement has already begun, and while it may be temporarily retarded by the Russo-Japanese war, it will be little, if any, affected one way or the other by the final result of that conflict. The events of the last ten years, including the war with Japan, the Pekin Relief Expedition of 1900 and the present occupation of the Manchurian provinces as the battlefield of foreign armies, have aroused China from the lethargy of centuries and given her for the first time in ages something like a coherent national spirit and ambition. When the indemnity claims now standing against her are settled she will have paid more than \$500,000,000 as the penalty of her own weakness and negligence. The enormity of that burden, which she is powerless to resist, has convinced China that her safety lies in a sweeping reorganization of her industrial energies, her military system and her business methods along lines that will enable her, unaided, to balk the aggressions of smaller but more progressive nations. This popular awakening to the need of adopting the ideas and policies of Western civilization is strikingly illustrated by the condition of railway interests in China. There are at present about 2,400 miles of railroad in the empire, counting the branches of the Trans-Siberian system in Chinese territory. There are 1,200 miles in process of construction, while concessions have been granted for 3,000 miles additional, and surveys have been made for upwards of 6,000 miles more. The construction of these lines will give added impetus to the intellectual and economic revolution now in progress in the Celestial Empire, and is bound to present attractive openings for American genius and enterprise.

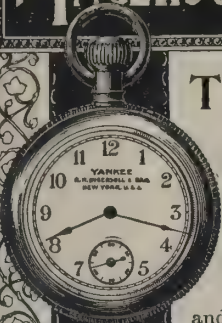
The relations of the United States with China are exceptionally favorable to the extension of American trade in the Chinese market. Our Government has been the steadfast friend of China when she has most urgently needed friends. We have stood resolutely for her territorial integrity, for fair play in her behalf in adjusting the indemnity judgments arising from the Boxer troubles and for a policy which should, as far as possible, save her from the perils of her own political weakness, giving her time to adjust herself to modern conditions and be able to discharge her international responsibilities with honor and dignity. China is not insensible to her obligations to the United States. She will not forget them. On the contrary, it will be found, we believe, that the American seeker for trade will be specially favored and treated as the preferred caller in China from this time forward. It is to that ancient empire, now rapidly rousing itself from the slumber and superstition of ages, that we may look for the most splendid achievements of American commercial and financial influence anywhere beyond our own continental boundaries in the next two or three decades.

It is both interesting and instructive to observe the changes, intellectual and commercial, which have occurred in China in recent years. Only five years ago a large class of the natives loathed everything foreign. To-day those same people are engaged in a fierce rivalry to see which shall lead in adopting Western manners, fashions, inventions and methods. Bicycles are common around the Forbidden City in Pekin, and the Dowager Empress has not only committed the revolutionary act of riding in a carriage of foreign make but has gone to the startling extreme of purchasing automobiles for the use of the imperial household and having her portrait painted for exhibition at the St. Louis Exposition! The first railway in China, fourteen miles long, was built by Russell & Co., of Boston, in 1876, but the government soon bought it, tore up the rails and stacked them along the right of way because, as was officially explained, the operation of the road disturbed the spirits of the dead which are constantly moving about in the atmosphere. The telegraph lines were repeatedly torn down for the same reason until Li Hung Chang, then at the head of the cabinet, one day issued a circular giving notice that any person caught meddling with the wires after a certain day would lose his head. That did the business, and thereafter telegraphic communication was uninterrupted. To-day there is a new China, thrilled with an awakened spirit of nationality. She beckons and invites—because she needs—the American and his products.

An Unanswered Query.

HERE is a brief recital of experience which testifies to the superiority of rubber garments made in America: The writer, during a summer outing in northern Canada this year, had the pleasure of taking for a morning's fishing on a mountain lake a woman who is the wife of a gentleman prominent in the official service of Canada and who has a social position of distinction in England. Three or four miles from camp a violent storm arose, and the lady had the alternative of being rowed back to shelter or donning the writer's rubber coat—a light-weight branded "pure rubber." She chose the coat, and the rain bothered her no longer. The bass were striking ravenously, as they always do in that wonderful country, but she found time to say: "Why is it that the rubber coats, blankets, boots and shoes that you Americans have are so much better in every way than we can get here in Canada? Yours are not only better fitting, more thoroughly waterproof and more durable, but are far superior in pattern and finish." The writer modestly declined to attempt any explanation, but if the obligations of a guest in a foreign country had permitted, he would have replied: "Because they are made in America."

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THE Ingersoll watches as shown here have revolutionized the watch trade of the world. They have established new standards of value. Buyers of watches, in justice to their own interests, must consider this line. Foreign buyers have long been accustomed to purchasing cheap watches, both cheap in name and quality, but we now offer an opportunity to purchase watches guaranteed to keep good time at very low prices.

Our watch factory is the largest in the world devoted solely to manufacture of time-pieces. The output is five thousand watches per day, which go to all parts of the world.

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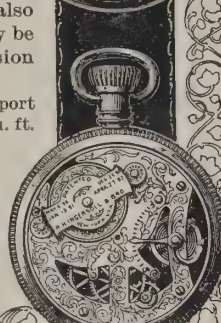
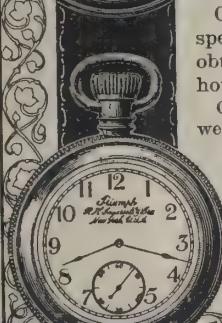
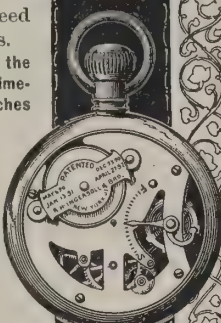
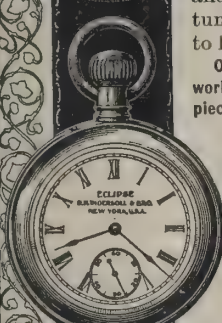
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One gross of watches packed for export weighs about 50 lbs. and measures 1½ cu. ft. Send all orders through your commission house and send us copy of same.

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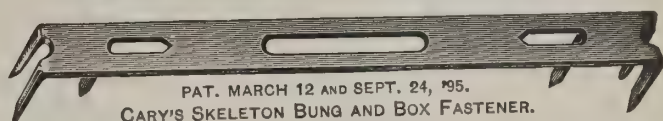
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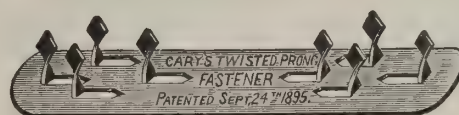
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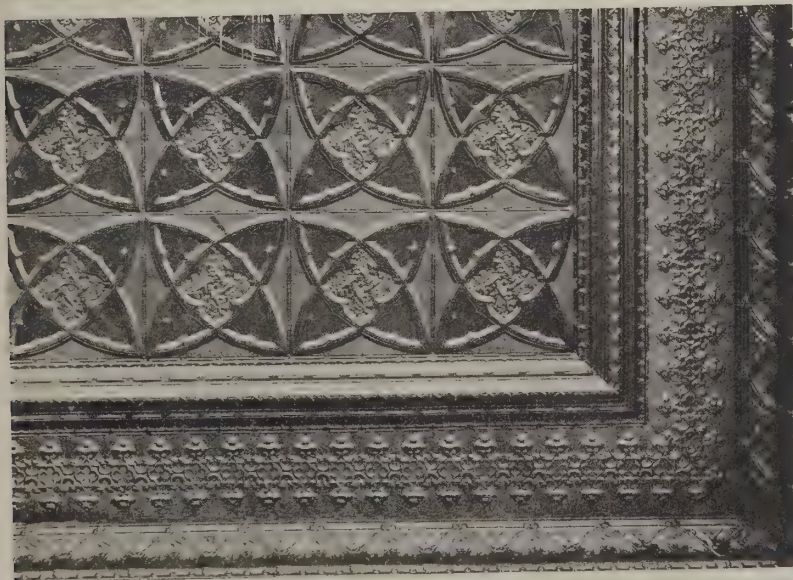


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INDUSTRY AND INVENTION.

Competitive Tests of Locomotives.

IN view of the fact that American locomotives are in use to-day on the railways of many Old World nations, and that they constitute a factor of growing importance in American exports, the trials of rival constructions at the locomotive testing plant at the St. Louis Exposition are matters of world-wide interest. These trials are in no sense spectacular, but practical and "strictly business," and the results are of permanent value to the leaders in locomotive construction.

In these trials the driving wheels of the locomotive under test run on smaller supporting wheels, whose axles are connected with absorption brakes operated by high water-pressure. The engine is attached to a draw-bar, which in turn is attached to a traction dynamometer. This dynamometer is imbedded in a solid concrete foundation. Instead of pulling a train, the locomotive pulls at the draw-bar. When the locomotive is fired up, and the throttle opened, its driving wheels begin to revolve. They turn the smaller supporting wheels, whose resistance may be increased by the absorption brake. The more power that is turned on the supporting wheels, the greater the work required from the locomotive to overcome the frictional resistance. The measure of this work—the work done by the locomotive—is made on the traction dynamometer, and is reduced to foot pounds. By means of delicate apparatus, the amount of pull exerted at the draw-bar is automatically recorded on rolls of paper.

But the amount of work done by the engine is not the only result obtained. Economy in coal and water is proved. The water used in the boilers is chemically treated, measured and purified; the coal is cleaned and weighed. By means of calorimeters attached to the engine, the amount of energy produced from the coal and absorbed by the water is accurately measured. Everything is, therefore, scientifically recorded.

The ideal conditions which govern these tests make it possible for all kinds of locomotives to be tested in the same way—measured by the same standard. Heretofore, the practical tests of locomotives were track tests, where the conditions varied with every test. During the Exposition American, German, and French engines will be tested.

Modern Machine Tools.

TO the student of modern mechanic industries the display of machine tools and processes at the St. Louis Exposition is a vertible revelation.

For machines working in metal there are those operated by shock, compression, or tension; steam hammers, trip hammers and drop forging; machines for cutting, sheaving, punching, stamping, counter-sinking and shaping; rolls, draw benches, wire drawing machines; machines for stretching and flanging and for bending, butting, welding and riveting. Another interesting sight is the methods of heating, annealing, tempering, cementing, welding and brazing, together with all the tools used with the forge and with the above named machines, as well as a full display of anvils, vises, hammers, shears, punches and dies, and various compounds for metal tempering, welding and cleaning. A full line of machines with cutting tools are on exhibition, such as machinery for drilling, boxing, reaming and tapping; machines for planing, milling, slotting, grooving and machines for grinding with grit, energy, carborundum and diamond. In the machine and forge-shop equipments are measuring tools and instruments of precision and for testing shapes and dimensions. Machines for working in wood are seen in every variety—for sawing, planing, turning, boxing, molding, mortising, tongueing, grooving, shaping and carving, as well as for polishing and veneering.

Uses of Electric Power in Farming.

ELECTRICITY is entering more and more largely into the operations of American Agriculture. Its advance is well illustrated in the condition of affairs in Kane county, in the State of Illinois, U. S. A., where the farmers are adapting electrical power to nearly all kinds of work. By the use of motors they are separating milk and cream, thrashing wheat, cutting corn stalks, sawing wood, grinding grain, pumping water, and lighting their houses, and are planning to plow, unload and bale hay, and haul their produce to market by electricity. There are now half a dozen big farms already equipped with electric motors and half a dozen more in process of equipment. The power furnished the Kane county farmers now using electricity comes from the trolley lines and the third rail electric railroad. It is poled in by short feeds to fifteen horse-power motors installed in small power-houses built contiguous to the barns. The voltage of the lines furnishing the power is 500. These farmers have experimented with gasoline, steam, and water power before turning to electricity. The motors can be operated by a 10-year-old child.

Tree Planting in America.—The clearing away of the forests in the Middle West of the United States of America has brought home to the great railway companies the need of providing a future supply of ties for their roadbeds. Accordingly, one of the largest of these corporations—the Illinois Central—three years ago planted 200,000 catalpa trees near the town of Du Quoin, in the State of Illinois. This artificial forest is thriving splendidly, and it will not be long before many of the ties on the Illinois Central Railroad will be cut from their own forest, planted in the heart of Illinois. The same company is at work on a similar forest in the State of Mississippi.

Explanation of the Air-Brake.

PROBABLY everybody who travels by rail knows that the train in which he rides is equipped with air-brakes. Probably he knows that the air-brake is an invaluable safe-guard against railroad accidents. But probably, also, he knows so little about the principle and operation of the air-brake that, if asked to explain the appliance, he would undertake to change the subject of conversation. Nor would he be blameworthy on that account.

The fact is that the air-brake, which is distinctly an American invention, is an exceedingly complex appliance. In its latest form it consists of twelve parts, among which are the air pump, which compresses the air; a main reservoir, in which the air is stored; the engineer's brake valve, regulating the flow of air; the train pipe, which connects the brake valve with the triple valves under each car; the quick-action triple valve, controlling the flow of air to and from the auxiliary reservoir, which is supplied from the main reservoir, and the brake cylinder piston rod, which is forced outward, thereby applying the brakes.

The theory of the air-brake is the equalization of pressures. When the brakes are not in action the pressure on the train pipe is made such as to prevent an escape of air from the auxiliary reservoir. When the engineer desires to make an application of brakes he turns his brake valve so that there is a moderate reduction of the pressure in the train pipe. This causes the greater pressure in the auxiliary reservoir to force air into the brake cylinder, forcing the piston out and applying the brakes.

When it is desired to release the brakes the engineer turns his valve in the opposite direction, permitting the air to flow from the main reservoir, located on the engine, into the train pipe. When the pressure, thus restored in the train pipe, is increased above the pressure in the auxiliary reservoir certain valves are moved, communication is thereby restored between train pipe and auxiliary reservoir, the piston is forced to its normal position, the air escapes from the brake cylinder, and the auxiliary reservoir is recharged through the train pipe.

When the train breaks in two or a hose-pipe connection is broken it has the effect of a sudden and material reduction of the pressure in the train pipe, the same as though the engineer had made an emergency application. The sudden reduction of pressure also opens supplementary valves, which increase the pressure upon the brake cylinder about 20 per cent. The brake shoes are attached to rods, which are in turn attached to the piston in such manner that when the air from the auxiliary reservoir forces the latter out a pulling force is exerted upon the brakes.

Progress in Applied Electricity.

EVEN those of us who are almost persuaded that there are no limits to the usefulness of electricity in human utilities are dazed now and then by some new and undreamed-of application of that mysterious force. It is fortunate, therefore, as an educational enterprise, that there has been assembled at the St. Louis Exposition a display of electrical appliances in which the student can witness the farthest advance in the science which is swiftly revolutionizing not merely the motive power but many of the mechanic industries and the sciences and arts of the world.

In the Electrical Building at the St. Louis Exposition one may see carborundum abrading-machines at work—the utilization of a product the first sale of which was at a rate of \$450 a pound. It is now turned out of electrical furnaces by thousands of tons a year, and is cheap. A new transformer for charging automobiles is there, which practically replaced elaborate machinery with a little glass tube, in which a mercury vapor glows brightly as the current passes through it—another electrical simplification. To switch off an electrical current of high speed and power would mean proximity to lightning, for the breaking of contact means a "spark"—an appalling blue flash—that has been known to leap fifteen feet. You see here switches that slip slickly through oil-baths where the spark is smothered. There has been a widening application of electricity to diseases. There are "fool-proof" things—electrical switches, for example, that will do no other than throw a current on by degrees, no matter how rashly an impulsive workman may wish to hurry the connection.

You may see a regulator at work which keeps lights at a uniform brilliancy; it actually floats on a field of magnetism, and wavers up and down as the load on the generator varies with the switching of lights on and off. An electric mine locomotive runs along with no trolley; it trails behind a feed wire running out from a revolving reel, or winding up as the locomotive goes back and forth in the imaginary mine-chamber. A graphic recording ammeter, for testing the quantities of electricity used in different kinds of machinery is already on exhibition—the first one of its kind ever made. It will probably be used in the electric railway tests.

Chemistry in American Industries.

CHEMISTRY as applied to American manufactures involves an enormous outlay of money, but it produces results that pay. Not long ago the Standard Oil Company got hold of a crude oil they could not use because of its vile odor. They sent for a good chemist and told him he must purify it; no negative answer would be taken. The desired result was obtained. When the Cambria Iron Company wants to find out what it can do with two specified pieces of metal it engages a chemist and sets him to work. Experts are paid extremely well for this sort of enterprise. A chemist in the employ of the Standard Oil Company was recently told to produce a vaseline that would kill rats. It was a hard thing to do, but he did it and the result is a new marketable commodity.

Aluminum Smokeless Oil Heaters

EQUIPPED WITH SAFETY BURNER.



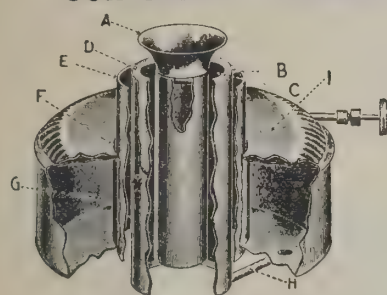
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Upon receipt of \$35.00 in U. S. gold or its equivalent, we will wrap and crate ready for steamer and deliver f. o. b. New York, 4 of each (12 assorted), No. 1, No. 2 and No. 3 Aluminum Heaters. Gross weight, 175 lbs.; net weight, 130 lbs.; cubic feet, 29 1/2.

No. 1—Brass burner; removable fount; 8-in. circular wick; height (ball down), 23 inches.
No. 2—Brass burner; removable fount; 10-in. circular wick; height (ball down), 25 inches.
No. 3—Brass burner; removable fount; 15-in. circular wick; height (ball down), 28 inches.

OUR SAFETY BURNER. Note Construction.



A—Flame spreader perfectly free from perforations.
B—Air space outside of wick tube.
C—Air space inside of wick tube.
D—Wick.
E—Outside casing to burner.
F—Air space between fount and outer casing.
G—Fount or receptacle for oil, entirely separate from burner.
H—Feed pipe connecting oil from fount to burner.
I—Shield resting on top of fount with air space underneath.

Absolutely safe. Explosions impossible. No perforations about the flame spreader to become clogged with oily substances. The only oil heater that radiates heat all over—bottom, sides and top. Only oil heater with partition in drum to deflect the heat and prevent it going straight up, and all because of the grand safety burner. No other oil heater has this safety burner. Order direct or through responsible exporter.

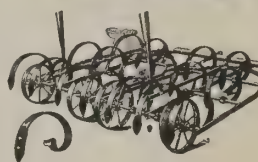
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Variety of kinds suited to the requirements of any country. Correspondence solicited. Catalogues furnished in English, German and Spanish.



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Successors to **INTERNATIONAL MFG. CO.**

MANUFACTURERS OF

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Being made of Galvanized Steel is the only washing machine that will not warp, rust or be affected by climatic changes. Absolutely germ-proof and perfectly sanitary.

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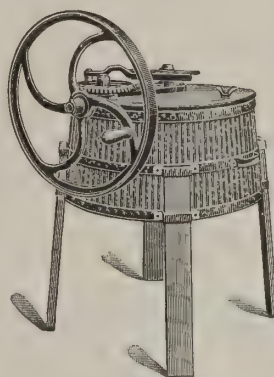
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2 United States Galvanized Steel Washing Machines.

Each machine occupies six cubic feet, and weighs seventy-two pounds.

Orders received direct or through export commission houses. When ordering through the latter, please specify "UNITED STATES."

UNITED STATES WASHING MACHINE CO.
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TRADE MARK

IRON CEMENT SHEET PACKING.

BROOKLYN BRIDGE POWER STATION.

New York, March 8, 1904.

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Gentlemen:—I have been using your Smooth-On Iron Cement No. 1 for some time back and have found it to be all that was claimed for it. I am now using your Smooth-On Iron Cement Sheet Packing and am pleased to say it is giving excellent results. It is especially good for steam chest covers. Oil has no effect upon it.



Respectfully yours,
WM. SMITH,
Chief Engineer.

Send for Catalogue and Prices.

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VREELAND TOMPKINS, Chemist and Manager,

JERSEY CITY, N. J., U. S. A.

MOON DESK CO.

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Manufacturers of
Roll-Top Desks
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No. 93. 60 inches long; 35 inches wide; 52 inches high; weight, 375 pounds.

A VERY popular desk; 22 file boxes, 9 inches deep, with cherry bodies; wide drawers, with highly polished cast-brass pulls; large center drawer. Ink-well set supplied free. Pedestal drawers trimmed with carved pulls, if preferred.

Special attention given to filling Export Orders. Send for Illustrated Catalogue and Export Price List. Order direct from factory or through buying and shipping agents, and send us duplicate of orders, so as to avoid mistakes.

EFFORT IN VARIED FIELDS.

Engineering for the Panama Canal.

ACCORDING to J. F. Wallace, chief engineer of the Panama Canal, a small party of American engineers employed in that project have discovered in the last four months what the French engineers did not find out in twenty years. They found a way of diverting the waters of the Chagres River into the Pacific Ocean and removing that at times turbulent stream from the Panama Canal problem. This party of young American engineers, most of them just out of college, was sent to explore the headwaters of the Chagres River. They were abandoned in the tropical jungle by the native helpers and had to carry on their backs the packs that the natives had abandoned. They cut their way foot by foot through the dense tropical growth along the river. They had maps that had been made by the French engineers, but they found rivers where none were indicated on the maps, and found none where they were indicated. About twelve miles from the canal route they found a river on the Pacific slope of the mountains not plotted on the maps, by which the waters of the Chagres can be carried to the Pacific Ocean.

Mr. Wallace estimates that the cost of changing the course of the river will be about \$16,000,000. The estimated cost of controlling the flood waters of the river under the high level plans of the canal is \$36,000,000. By diverting the river to the Pacific Ocean, Mr. Wallace says, the \$20,000,000 saved could be used in constructing a sea-level canal. There are four plans for a canal under consideration—one at the sea level, one at a 30-foot level, one at 60 feet and one at 90 feet. If a high level is decided on, waters of the Chagres will have to be used to supply the water between the locks. The only plan until recently for controlling the flood waters of the river was to dig a channel 600 feet wide and 40 feet deep. The river is subject to sudden rises, and the control of the floods has caused the greatest engineering difficulty in the construction of the work.

Geography and Historical Maps.

AMERICANS justly rejoice in the fact that the assembly of the International Geographical Society in the United States is coincident with the most comprehensive display of historical maps of the western hemisphere ever brought together. In the Government Building at the St. Louis Exposition two separate departments are given wholly to this interesting collection. The maps shown there were specially selected and arranged by the Library of the United States Congress, and are particularly fine specimens, commencing with the mappemonde of Janson of 1618 up to Luffman's map of the United States of 1819, and include the Louisiana maps of Delisle, Senen, Danville, Bellin and Lopez. At the opposite end of the buildings is the collection shown by the Bureau of American Republics, in which are many maps relating to Central and South America.

In the Liberal Arts Building the State of Louisiana displays nearly 200 maps and books containing maps illustrative of the gradual growth of knowledge of the north shore of the Gulf of Mexico, the exact contour of which was not clearly known with the surveys of the coast survey department in 1837 and subsequent years. This collection, loaned to the State by the librarian of the Howard Memorial Library of New Orleans, contains a facsimile of the celebrated map drawn on bull's hide by Juan de la Cosa, the pilot of Columbus on his third voyage; the maps relating to America from the many editions of Ptolemy, and the maps of America and Louisiana by De Bry, Mercator, Munster, Hondius, Hennepin, De Fer, Van der Aa, Delisle, Moll, Homann, D'Auville, Mitchell, Vangundy and Jeffreys. These are arranged, as nearly as possible, in chronological order, and afford a rare opportunity for the study of the gradual settlement of the Mississippi Valley. By this arrangement is shown clearly the duration of the mistake of mapmakers, who, from 1660 to 1713, represented Southern California as an island.

Skilful Work in Tunnel Construction.

AMERICAN engineering skill and the excellence of American implements are exemplified in the construction of the tunnel under the Harlem River in New York City for the underground railway. Here the tunnel was sunk twenty feet below the surface of the river without the use of a shield or of compressed air. And all the time this work was going on vessels passed through the river. The method employed in this work attracted widespread attention among engineers everywhere. First the river bottom was excavated by means of a dredge to about grade level. The river bed was mud and clay. After the excavation had been made twelve-inch tongued and grooved sheet piling was sunk to the bottom and divers were employed to fix cross braces which held the sheeting in place, forming a cofferdam. Then the water was pumped out and parallel iron tubes for the trucks were put in place. The length of the tunnel under the water is four hundred feet. While this work was going on the United States government required that the channel be kept open for navigation, and this was done.

Artificial Camphor.—Artificial camphor in convenient quantities is now produced at a factory near the city of New York, N. Y., U. S. A. The natural product that forms the starting point of the new chemical process is turpentine, by the distillation of which, with oxalic acid, two products are formed, both of which can easily be converted by the action of alkalis into camphor.

Traveling Libraries.

AN educational agency of great value in the United States appears in what are known as traveling libraries—that is, carefully selected collections of standard works of history, fiction, biography, etc., which are taken from town to town for the accommodation of subscribers. This novel institution was first established in the State of Kansas, and the record of its work is highly interesting.

Starting in 1898 with about 3,000 volumes intended for the use of club women of the State, the Kansas Social Science Federation began a system of traveling libraries. In July, 1899, these volumes passed under State control, and they now form a part of the present system, which has reached a total of 15,504 volumes, read by more than one hundred and fifty thousand persons, who are reached in practically every section of the State.

Other States have tried the system with success, and now thirty-three States have traveling libraries. But for the time the system has been in operation in Kansas their growth and influence have been remarkable. It has far exceeded the hopes of those who founded these libraries.

Traveling libraries are furnished on application by some responsible person representing a local library, school district, reading club, literary society or similar organization. The only expense is a fee which is used to pay the expenses of transportation to and from destination. This fee is the average cost to the commission for each traveling library. The libraries are made up of fifty volumes, assorted to meet the requirements of the readers, and packed in strong cases. The applicant may signify the nature of books desired, whether history, travel, biography, poetry, art, science, fiction or juvenile.

He may send a list, which is filled with either the books named or those along the lines suggested. The library may be kept six months or longer if the application be renewed. An extension fee of 25 cents a month is forwarded to the secretary, or the library may be exchanged at any time for another library on payment of the transportation. The applicant, who usually becomes the local librarian, has the general management of the books while they are in his care and their use is left to his discretion.

America's New Army Rifle.

MILITARY experts are of the opinion that the new magazine rifle soon to be issued to the United States Army is superior to any other army rifle in the world. About 40,000 of the new weapons have been completed, but these will not be issued until there are available 100,000, or enough to supply the maximum strength of the army on a peace footing. At the present rate of production the desired number will be ready about December 1st of this year. Some notion as to the efficiency of this new rifle may be gained from the statement that twenty-three aimed shots have been fired in one minute with the rifle used as a single loader, and twenty-five shots in the same time, using magazine fire. Firing from the hip without aim, twenty-seven shots have been fired in one minute, using the rifle as a single loader, and thirty-five shots in one minute from the magazine. With an ordinary charge the powder pressure in the rifle chamber is about 49,000 pounds to the square inch, and the maximum effective fighting range 4,781 yards. The exceptional penetrating powers of the rifle were illustrated in a test held some time ago. With full service charge, the rifle, fired at a distance of fifty feet, drove its steel missile 54.5 inches into white pine butts, and penetrated a steel plate nearly one-half inch thick. The bullet which will be used in the arm has a core of lead and tin composition in a jacket of coupro-nickel and when fired with a service charge has a muzzle velocity of 2,300 feet a second. It is hoped by the ordnance experts that the new gun will prove to be not only abreast of small arms construction, but somewhat in advance, so that it will be unnecessary to make another change in the weapons of the United States Army for a good many years to come.

Fertile Land Still Cheap in America.

AS showing that attractive opportunities for home-builders in America are still open, it is worth noting that Kansas, one of the most fertile and prosperous of the United States, still has 999,436 acres of land which may be bought from the Auditor of the State for \$1.25 an acre. The Auditor's report for the fiscal year shows that 78,490 acres of the public lands were sold and the money paid into the State school fund. The demand for the public land is increasing to such an extent that twenty per cent. more land was sold between June 30, 1903, and June 30, 1904, than in the preceding year. While there is almost a million acres of land yet for sale in the State, the greater part of it is west of the ninety-ninth degree of longitude. The amount of money received by the Auditor during the last fiscal year from the sale of school lands amounted to \$220,054. This will be added to the permanent school fund for the support of the common schools.

New Collars of Celluloid.

CELLULOID collars of a new design for men's wear are among the newest American productions. These collars, which are made of perforated celluloid, are intended for policemen, conductors and others who are compelled to wear uniform collars while on duty. Some of these, prompted both by economy and expediency, adopt celluloid collars. In any temperature these composition throat pieces are hot. In warm weather they are especially uncomfortable. Only the back is ventilated, hence the collar is not unsightly.

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5 doz. pints Born's Muenchner, packed in barrel	\$10.00
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OFFER No. 2.

6 doz. quarts Born's XX Pale, or 6 doz. quarts Born's Muenchner, packed in barrels, \$10.00 net cash, F. O. B., N. Y.
10 doz. pints Born's XX Pale or 10 doz. pints Born's Muenchner, packed in barrels, \$10.00 net cash, F. O. B., N. Y.

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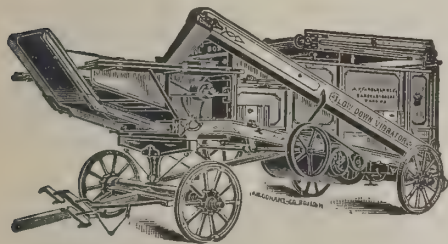
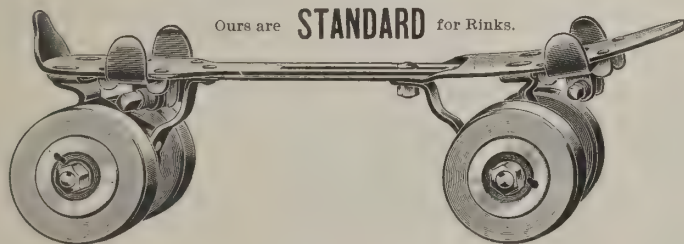
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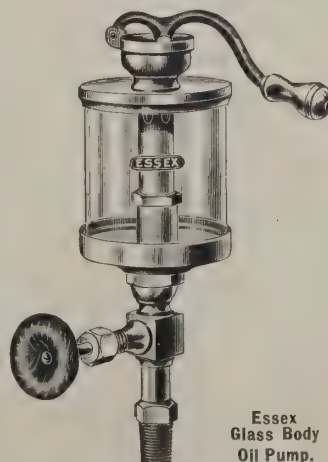
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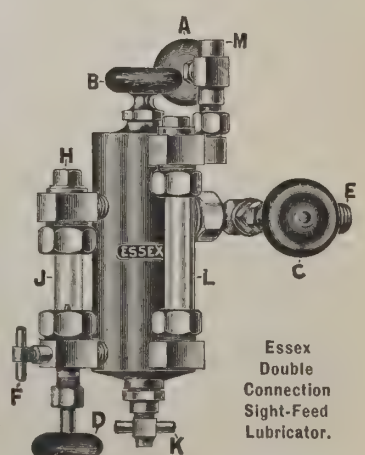
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Essex Double Connection Sight-Feed Lubricator.

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RESULTS OF APPLIED SKILL.

New Flying Machine.

PROF. ALEXANDER GRAHAM BELL, of Washington, D. C., U. S. A., has patented a new device for flight which it is believed will go far toward solving the problem of aerial navigation. The device is a tetrahedral or four-sided kite of which much has been written in the last few months. The patent applies more specifically to the tetrahedron or body having four triangular sides, as the unit form for constructing an aerial machine.

Professor Bell drew the papers himself in the application and he says: "The recent developments in kite structure have been largely due to the investigations of Laurence Hargrave. The rectangular cell is structurally weak and easily distorted, requiring internal bracing, which also adds to the dead load, besides opposing additional head resistance to the wind, increasing the drift of the kite. Moreover, there is a limitation to the lifting power of kites of this description, since the mere increase of the dimensions of the kite in its parts does not increase the lifting power proportionately to the supporting surfaces, but just the reverse. This is due to the fact that the weight increases as the cube of the dimensions, whereas the surface exposed to the action of the air increases only as the square. Hence in two kites differing only in dimensions the ratio of weight to surface will be greater for the larger kite than for the smaller.

"I have found that the desired qualities mentioned above reside in a high degree in a cell constructed in the form of a skeleton of a tetrahedron, and cells of this form constitute the units or elements from which a great variety of structures contemplated by this invention are or may be built up. The tetrahedral skeleton or frame may be composed of six bars or rods so connected at their ends as to form the outlines of four triangles. This tetrahedral cell or frame is found to possess, with minimum weight of materials, the qualities of rigidity and strength to a remarkable degree, and for this reason is adaptable to a great variety of structural uses.

"Considering particularly the subject of aerial vehicles, such as kites, the tetrahedral cell possesses rigidity or strength in three directions—that is to say, vertically, laterally and longitudinally—so that internal bracing is entirely superfluous and is dispensed with. When one of the bars is taken as a keel and the two opposite triangular surfaces rising therefrom are covered with silk or other suitable material, the other two triangles being left uncovered, we have a structure which I call a winged tetrahedral cell. Each of the oblique surfaces of this winged cell is the resultant (and equivalent for the purposes in view) of its horizontal and vertical components, constituting a decided gain in lightness as well as in rigidity.

"Obviously in building up a compound structure by connecting together a number of these winged cells the ratio of weight to wing surface remains practically uniform. Experiment shows that kite structures of great size, compounded of these winged tetrahedral cells, fly as well in the same breeze as kites composed of a relatively small number of such elements."

Novel Distance-Recorder.

RURAL free-delivery carriers of mail in the United States are being supplied with a contrivance for measuring their routes, in order that the Post-office Department may be enabled to adjust salaries and other questions on an equitable basis. The machine is a bicycle wheel, larger in diameter than the ordinary wheel, and having attached to it a cyclometer. To the bicycle wheel is attached a pair of iron rods of the nature of shafts, which are made to fit over the axle, the other ends being fastened to the middle of the axle of the vehicle carrying the mails. In this way the bicycle wheel revolves and the cyclometer records the distance made. It is accurate, because it records the actual distance traveled by the vehicle to which it is attached, and not the length of the main roads. If the wagon is obliged to go around a mud hole the cyclometer records the fact, and the distance thus forced upon the horse and the driver by a bad road is placed to the credit of both. There are about 100 of the machines in operation now, and more are to be purchased and distributed whenever the demands of the service call for them. It, therefore, will be a comparatively small matter for the department to at an early date have its rural delivery routes accurately measured and the many thousand miles they cover in figures available at any time.

Advance in Flashlight Photography.

AN American inventor has produced a flashlight powder for photography which has now become so perfected that the notion that such a picture is liable to be faulty because of the startled expression which comes to the eyes of some of the sitters, is entirely erroneous. The powder is quicker than human perception, and long before the sitter has had time to be startled the plate has caught the impression. It is, to be sure, possible so to arrange the powder that its flash continues long enough to show such expression, but no photographer who knows his business does this. The peculiar staring look seen in the faces in some flashlight pictures is generally due to the feeling of expectancy on the part of the sitters while waiting for the flash. If they did not know the flash was coming they would never jump or stare in time for the camera to catch it.

New Type of Canal Boat.

CANAL boats of a new type are about to be installed on the canal between Cincinnati and Dayton, Ohio, U. S. A., their peculiarity being a contrivance which, it is claimed, permits the realization of the advantages of eight feet of water in a depth of a foot or even less. The propeller, being inclosed in the center of the boat in a sheet-iron chamber, gives no opportunity for wash of the banks. On the contrary, the screw stirs up the mud in the bottom of the canal and tends to deepen it and keep it clean. Then the new boats costs one-half as much to propel as the boats by animal power and requires a smaller crew, besides having one-half of the draft of the wooden boat. The new boat is to have a twenty-five horse-power gasoline engine, which will enable it to tow another boat or two if necessary. The device which transforms, as it were, one foot of water into eight is very simple. The basic idea is the creation of a vacuum in a chamber and magazine located in the central part of the boat. The chamber, which is practically nothing more than an elevation in the floor of the boat, is 31 inches wide, 31 inches high, tapering each way 12 feet. The chamber is open underneath and has direct connection with the water in the canal. Within this chamber is located the propeller, the lower flukes of which touch the water. An air-pump exhausts the air from the upright magazine which connects with the chamber. The water from the canal, of course, rushes in to fill the vacuum thus created, rising to the top of the magazine, which is eight feet above the water level. The results are the same as if the boat was submerged in eight feet of water, the resistance and pressure of that depth of water being realized.

America's Best Customers.

FOREIGN appreciation of American products is unmistakably indicated in a statement by Mr. Francis B. Loomis, First Assistant Secretary of State of the United States, as follows: "Great Britain and her dependencies are our best customers. We sell to the United Kingdom more than \$500,000,000 worth of domestic goods every year. Germany comes next with less than two hundred millions, and after that the Netherlands, France, Belgium, Italy, Mexico, Austria-Hungary, Cuba, Japan, Spain, Denmark, China and Russia in the order named. We have a large trade with the British dependencies. Canada is an excellent customer. It takes from us about as much as South America, Asia and Africa combined. In other words, according to the figures of the Department of Commerce and Labor, issued last April, our sales to Canada amounted in round numbers to \$129,000,000, while the total for South America, Asia and Africa is less than \$119,000,000. Australia is another good customer. Its imports are in value about as great as those of Japan, while Great Britain and Ireland buy annually from us more than half of our total sales to Europe, and between two and three times the amount we annually sell to the Germans."

Long Automobile Run.

TO test the endurance of American automobiles in long-distance runs, a gentleman living in the city of San Francisco, Cal., U. S. A., recently made the journey from that point to New York, N. Y., U. S. A., in a single car, covering the route in thirty-three days. The journey was about 4,500 miles, and he traveled an average of more than 135 miles a day. Such a performance shows that the mechanism of good cars has passed the experimental stage. Every year we may expect safer, more trustworthy, simpler and cheaper machines, until one shall cost less than a horse and wagon, and may be run with safety by any man or woman of usual care. Such machines can be made to do all that light wagons now do, and they can be run for less cost for fuel and oil than the feeding of a horse, and with less care than a horse and wagon require.

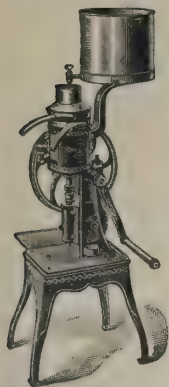
Copper to Destroy Typhoid.

GREAT interest has been aroused in medical and scientific circles in the United States by the announcement of Professor Moore, of the Department of Agriculture, that copper is an effective germicide for the bacilli of typhoid fever, and extensive experiments to show whether his claim is well founded are proposed in various parts of the country. Professor Moore's own experiments have been undertaken and carried on with strict regard to the importance of the subject, and with that fidelity to scientific demands and acquirements that has always distinguished the experiments conducted by the department. The Washington authorities are considering the adoption of the copper cure for the Potomac water supplied to the city of Washington.

Migratory Labor.

AMERICAN skilled workmen are generally able to change their base when they so desire, but probably none of them move over so large an area of country in the course of a year as do the expert fruit-pickers and packers of the Southern States. They begin their year in Georgia, for instance, where the peach season comes in June. From the south of the State they go to the north; then to Arkansas and Missouri; later to Michigan and to the mountain districts of western Maryland; finally to California and Florida, and thence round to Georgia again. Metaphorically, "cherries are ripe" at every season somewhere in this fortunate land, and he should be a happy man who, even in the way of business, can keep perpetually in touch with the beauty and luxuriance of harvest.

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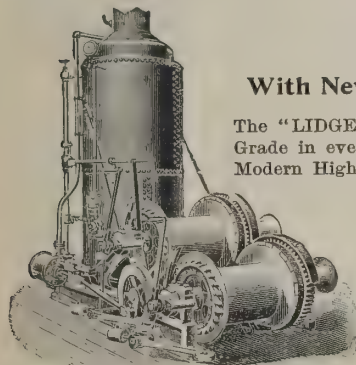
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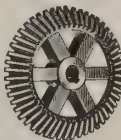
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Patent Internal Clamp Coupling.



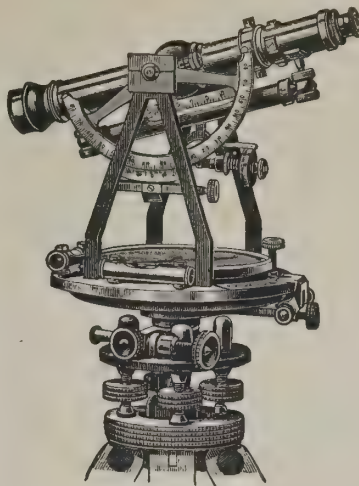
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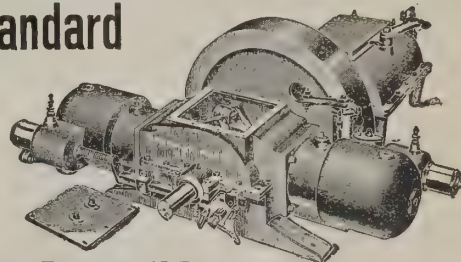
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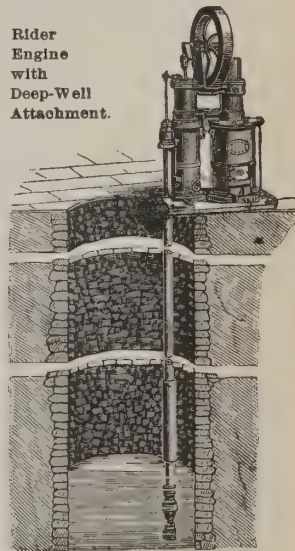
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NOTE.—The prices quoted, U. S. gold or its equivalent, are for Export only, include boxing, ready for transportation abroad, and delivered f. o. b. cars at New York City.

Spramotor No. 0, Outfit G, with ten feet of hose, hand valve and eight-foot iron extension pipe, patent drip guard and one Spramotor nozzle. Net weight, 22½ pounds; gross weight, 41 pounds; boxed, 12x12x34 inches. Price, complete.....

\$ 8.00
90.72

Spramotor No. 0, Outfit G, price per dozen.....

Spramotor No. 1, as illustrated, with ten feet of hose, patent hand valve, eight-foot iron extension rod, drip guard and painting nozzle, barrel and screen. Gross weight, 157 pounds; net weight, 65½ pounds. All appliances, as shown, are packed within the barrel; 24x24x34 inches. Price, complete.....

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Spramotor No. 1, price per dozen.....

These machines will apply any kind of COLD WATER or OIL PAINT.

SPRAPAIN, a Paint in DRY-POWDER FORM, only requiring the addition of cold water for instant use. Specify "Spramotor" and "Sprapain" when ordering.
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Spramotor Painting and Whitewashing Machine No. 0, Outfit G.



Spramotor Painting and Whitewashing Machine No. 1.

Cottonseed Meal as a Fertilizer.

COTTONSEED meal is used extensively in the manufacture of commercial fertilizers in the United States, and with excellent results. The State of Georgia uses more of such fertilizers than any other State, and their value is easily illustrated. They contain from 1,000 to 1,100 pounds of cottonseed meal to the ton, and about 400 pounds is the quantity used per acre of corn. The quantity varies for potatoes, cotton and other farm produce according to the nature of the crop's requirement.

The following mixture is officially recommended for corn land generally: 1,200 pounds of cottonseed meal, 1,000 pounds of acid phosphate and 30 pounds of muriate of potash. This mixture totals 2,280 pounds and is the bulk proper for a field of five acres of corn, or 456 pounds per acre. Richer lands need less and poorer lands a trifle more. As 1,000 pounds of cottonseed meal contain 68 pounds of nitrogen and the same bulk of cottonseed only 21 pounds, it follows that the meal is more fertile in this respect than the whole seed. Cottonseed meal also contains about 30 pounds of phosphates.

On the basis of \$18 per ton at the farm for a high-grade cottonseed meal fertilizer, and 400 pounds of this to the acre of corn land, the cost per acre would be \$3.60 per acre for fertilizer alone. At the present farm price of corn it would require 9 bushels of corn to pay for the fertilizer used. The experience of the Southern farmer is that the average corn lands without the use of any enricher produce less than half a crop. The average amount of \$18 fertilizer used is 200 pounds, or one sack per acre. Land that ordinarily produces 12 bushels of corn per acre without the use of farm or factory manure will usually produce 30 to 35 bushels by the use of 400 instead of 200 pounds of fertilizer per acre. On the basis of 28 bushels the farmer, for the same labor cost, produces 16 bushels more than a natural soil crop. The extra cost for fertilizer being \$3.60, or 9 bushels of corn at 40 cents per bushel, leaves him 7 bushels profit per acre—that is, net.

The potato crop takes a different mixture. The proper formula for sweet and Irish potatoes is 1,100 pounds of cottonseed meal, 1,000 pounds of acid phosphate and 500 pounds of muriate of potash. This bulk makes 2,600 pounds, and it is required for four acres of ground. The distribution amounts to 650 pounds per acre, or about \$6 per ton. But, then, potato ground produces from 50 to 100 bushels per acre without fertilizer, and from 200 to 600 bushels per acre with a fertilizer.

The extra production of crops by the use of fertilizers and the excellence of the cottonseed-meal mixture for such a purpose have accounted for the large use of this material and the increase in the crushing industry of the South. Farmers have yet to be taught how to properly handle and plow under the compound for the best results, and on these results depend the larger buying of such fertilizers.

Machine for Coaling Steamers.

AN ingenious stevedore in New York, N. Y., U. S. A., has devised a machine for coaling steamers, by which, it is claimed, such operations can be performed more rapidly and more cheaply than with appliances now in use. The contrivance is an adaptation of the endless-belt elevator for the lifting of grain, and it is, therefore, not absolutely new. The practicability of it lies in the ease with which the power may be applied through the use of the electric motor, and the comparative smallness and lightness of the machine. It is 24 feet long—high as it stands on end while in operation—and approximately 3 by 3½ feet in its other dimensions. Its weight is only two tons. Run at full speed, this elevator can put 100 tons of coal into a steamer from a barge in one hour, with a crew of five, including an attendant at the starting box of the motor, two shovelers on the barge and two trimmers in the hold of the steamer. With four elevators in operation—two on each side—the most voracious of the coal-consuming steamers can be supplied with sufficient fuel in ten hours. The process is not only quicker than the old way, but it is more economical, as no coal is lost overboard in the handling.

Boat That Digs Its Own Canal.

NEAR the Pacific Coast of the United States, but remote from sea, lake or river, may be seen a pit nearly a mile long, 40 feet wide and 15 feet deep, in which floats one of the queerest vessels in existence. It is a large, flat-bottomed barge, seamed and caulked and made properly seaworthy. On the barge are erected derricks, and much strange machinery driven by powerful electric motors. By the time all is installed water has percolated into the pit, and the boat, built under such queer conditions, is afloat. This is the gold dredge. The sand with which it is surrounded contains gold in quantities which would not pay to work out, except by such a scientific apparatus as this. When operations begin the sand and soil in front of the boat are dredged up, dumped into sluiceways on board, washed, sifted and treated so as to secure valuable particles, and the débris (tailings) is then deposited over the stern. The work goes on continually, the unwieldy boat gradually eating its way through the marshy slopes, filling in the canal behind, as it works along foot by foot, and never having floating room more than a few feet beyond its own length. The electric current is generated in a separate power house on land, a short distance away, and conveyed to the motors on board by the usual conducting wires.

Courtesy in Business.

COURTESY costs nothing, but it is not lacking in value. In business it can be employed to increase sales, prevent the loss of profitable lines, secure valuable information, and not infrequently to collect or secure doubtful accounts. The sour, crabbed, gruff-spoken business man must in the very nature of things repulse trade and profitable suggestion, and gain the ill-will of a considerable portion of the people with whom he comes in contact. Men who, unless under obligations, endure patiently and without resentment the discourteous treatment of others constitute a small minority. Human nature rebels against discourtesy and abuse. It does not always manifest its resentment by retaliation in kind. If it did, the menace to an impolite tradesman's business interests would be slight. The danger lies in the nursed wrath, the anger that bids its time.

The sales manager of an implement manufacturing concern waiting at a junction point for a homeward bound train called upon a dealer who handled one of the company's popular lines with great profit. It was the first meeting of the two men. The dealer, noted for his discourtesy to strangers, especially to strange salesmen—a reputation he was proud of—mistaking the manager for one of the fraternity, ignored the proffered card, made some contemptuous reference to the number of salesmen who "bothered" him, and interrupting the attempted explanation turned on his heel and bolted for the rear of the store. The next season one of his competitors handled the popular line with great success. Five hundred dollars would not cover the discourteous dealer's loss in that one season.

A manufacturing corporation was in financial straits and seeking a settlement whereby creditors were to have the option of 75 cents on the dollar cash or 100 cents in stock in the company. It was believed by those familiar with the conditions that the embarrassment was assumed, it being the purpose of the majority stockholders to force an assignment and then buy the plant at half its value. A distant iron merchant creditor, hesitating between the two propositions, sought advice from one to whom he was referred, one who was informed of the company's true condition and knew of the principal owner's purpose. It happened that this one had received discourteous treatment from the identical iron merchant a few months before. On his advice the iron merchant accepted stock in the company to the amount of his claim. Three months later the company assigned, and subsequently the principal stockholder bought the business at 35 cents on the dollar. The discourteous iron merchant received as much for his stock. As his claim was large it will be seen that this one act of discourtesy cost him dearly.

These incidents of widely different circumstances serve to illustrate how important it is to be courteous on all occasions. One never knows when the consequences of an ill-mannered act will bring loss in some form to his business. It is especially important for retail dealers to cultivate the friendship and regard of salesmen. With rare exceptions the most successful retail tradesmen are those who have the most friends in the traveling fraternity.—*Farm Implement News.*

New Trench-Digging Machine.

BUILDERS in New Orleans, La., U. S. A., are constructing a machine for dredging trenches, which seems likely to be a labor-saver of great value.

The machine is so extremely simple that experts are wondering that it was never thought of before. The fact is there is no new principle involved, the idea that is patented being the combination of two well-known principles, both of which have been applied for generations. In the rear of the machine is an ordinary scoop-dredge, such as every one is familiar with, consisting of a long arm, with a spade attachment at the end, which is worked by a system of levers and pulleys that lowers and drags it through the ground just as you would imagine a giant doing with a monster spade.

Formerly this arm had to be stopped in its operation of digging and swung out to dump the dirt it had taken up. In the new machine this time is saved by a system of revolving buckets that come down under the arm empty, fill with the dirt taken up in the spade at the lower end, go up on the upper side of the arm filled with dirt, which it dumps into a trough at the top, with two extending arms, supplied with revolving belts, that pour the dirt in two streams on either side of the trench that is being dug. The best calculations show that in the old machine one-third of their working time is consumed in the swinging out of the arm and discharging the dirt, and absolutely all this time is saved by the new machine.

Making Schools Attractive.

IN order to obtain the largest possible attendance of children at the public schools in the United States it is proposed in some States that the local authorities shall provide free midday meals for pupils. Another proposal is that as a means of doing away with truancy the State should pay every child between the ages of 6 and 14 years a certain sum for every day he or she attends school. When one hears of propositions like these he naturally wonders where the limits of expenditure for public education will be set. The cost of the public schools is now high; there is no knowing how it would swell if some of the proposals made should be adopted.



Olds Gas and Gasoline Engines

Are built on lines of strict originality, and are protected by the Olds patents. The essential parts of our engines combine the highest efficiency with the greatest simplicity of construction and operation. No engine made approaches the Olds for economy and durability.

Stationary Engines, - 2 to 100 H.-P.
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Rife Hydraulic Engine.

PUMPS WATER BY WATER POWER.

Irrigation with Rife engines.

Does not require any care or expense.

Water supply for towns, railroad tanks, country houses. All engines guaranteed. Catalogue free. Estimate furnished. Engines never stop. Pump water to 30 feet high for each foot of head. 4,000 engines successfully working.

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Grain Cleaning Machinery,

Seed Cleaners, Flour, Bran and Feed Packers, Cement and Plaster Packers, Coffee Roasters, (Gas, Coal and Coke) Coffee Cleaners and Polishers, Coffee Hullers, Rice Hullers, Graders, Separators and Cleaners. Special Machinery for Flour Mills, Grain Elevators and Warehouses, Cement Mills, Rice Mills, Coffee and Spice Mills.

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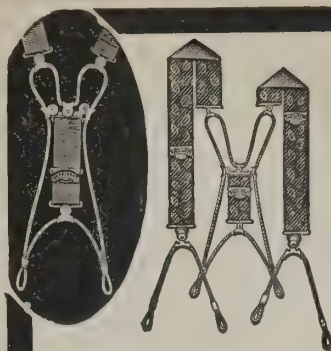


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BALL-BEARING GARTERS

Swing like a pendulum with the motion of the leg. Lay flat; no binding; fit every leg perfectly. Easily adjusted. No stitching. Extra long adjustment.

Finest web, in many colors and patterns; packed in handsome boxes, 12 to carton. Handsome counter display carton with 3 doz.

PRESIDENT SUSPENDERS, \$4.37½ per doz., for all models except "Extra Fine," which are \$7.19 per doz.

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For Wooden Vessels' Bottoms, prevents boring of worms and all marine growth.

Awarded Eight Highest Medals:

Gold, Silver and Bronze.



Excels on Every Point.

Cheapest to Use in the End.

TESTIMONIAL. NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly, (Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

THE WORLD'S STANDARD FOR FORTY-ONE YEARS

RACING COMPOUND for Wooden Yachts' Bottoms,
Bright and Smooth.

Manufactured Only by TARR & WONSON, Limited,
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The Handy Fruit and Vegetable Slicer

The most interesting kitchen utensil ever invented. It slices every kind of fruit or vegetable into an infinite variety of unique and fancy designs, making an entirely new, novel and delicious product.

Is invaluable for making delicate salads, garnishings, etc. Makes Juliennes ten times as fast as by the ordinary method and is the only utensil that will produce **Lattice Potatoes**. Is extremely simple to operate and sells rapidly wherever shown.

\$16.50 Upon receipt of **SIXTEEN and 50-100 DOLLARS** in U. S. Gold or its equivalent, we will deliver boxed, ready for steamer, F. O. B. cars New York, one gross [144] **No. 6 X SLICERS, for Export only.** Weight boxed, 120 lbs.

NOTE.—To facilitate our rapidly increasing export trade we desire to arrange with one responsible business house in each trade center of the world, to handle our **NO. 6 X SLICERS** and other specialties manufactured by us.

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We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

With Our Machines seed is quickly cut to best advantage. Planting, fertilizing and covering are accomplished at any depth and width of row desired. Spraying is effectively done for bugs and blight. Digging and sorting are made pleasant and agreeable work by our time and labor saving machines.

Our catalogue, illustrating and describing the various styles of

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Planters, Cutters, Sprayers, Diggers and Sorters made by us, mailed postpaid.

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HEADWAY IN LABOR SAVING.

Steam Power in Harvesting.

AMERICAN agriculture is conducted on so broad a scale that the use of steam-propelled machinery is entering more largely into its operations every year. The steam harvester is practically indispensable on the great farms in the Western States. Such an outfit usually consists of a traction engine, separator, cleaner and header, and with it the grain is cut or headed, threshed, cleaned and sacked in the field ready for shipment. A representative style traction engine for such service is of 50 horse-power and constructed without gears. The cylinder is 9½ by 9 inches; drive wheels, 24 inches wide by 7 feet high; height of engine, 12 feet 4 inches; height of engine to top of smokestack, 18 feet 4 inches. The general mechanism is embodied in a friction running on the main crank shaft. This may be readily thrown out of gear. But two sets of chain are used, and these with the friction constitute the entire mechanism. The engine may be turned in a space as limited as its own length.

The separator is 40 feet 8 inches long and 11 feet wide; including the sack dump it is 18 feet 7 inches wide. The cleaner is 5 feet wide, and the cut 42 feet wide. The height of the combined harvester is 12 feet 6 inches, and its extreme length, including engine and separator, is 65 feet 2 inches. To operate such an outfit a crew of eight men is required, made up of one engineer, one fireman, one man to haul water and coal, one for the separator, one header-tender, two sack-sewers and one sack-filler. When the grain stands well and water and fuel are convenient, the outfit will cut 120 acres per day, and as high as the product of 150 acres, or 4,200 bushels, has been cut, threshed, re-cleaned and sacked in a single day of twelve working hours.

The approved style of steam-generator for these steam-harvesting outfits is a return tube water-leg firebox type of horizontal boiler, in which the flame and heat are carried through over two mud drums and returned through the small tubes in the main portion of the boiler, thus utilizing the heat in the fullest degree and producing the maximum amount of steam while reducing the risk of fire from sparks. In the smaller outfits already mentioned there is used in some instances a Scotch marine type corrugated flue boiler especially designed for burning crude oil.

The water-carrying capacity of the tanks on the engine is from 400 to 750 gallons. The water consumption is from 2,500 to 3,000 gallons per day. The amount of fuel consumed in the operation of such an outfit varies, of course, under different conditions, but the average daily consumption may be set down as 1½ cords of good hard wood, one ton of first-class steam coal, or 200 gallons of crude oil.

One of the most vital questions confronting the farming interests to-day is the scarcity of labor, and this tendency alone is cause for power-operated implements. Within a few years, through the agency of steam and gasoline, the staple agricultural products of the United States will stand without a rival from the point of view of low cost of production.

Uses of Liquid Fuel.

AFTER exhaustive tests extending over a period of more than a year with scores of appliances, new and old, the official board appointed by the United States Government to determine the relative values of coal and liquid fuel for marine and naval purposes has made a report which is of general interest. The report fills a volume of upward of 500 pages, but the gist of it, so far as concerns the use of petroleum in steam-making, is contained in this one conclusion: "That in the consideration of the problem of attempting to use oil as a fuel for either marine or naval purposes it should be particularly remembered that, by reason of the economic and commercial demands for crude oil for illuminating, lubricating and other purposes, the available supply of the world's production of crude petroleum that could be used as a fuel would not meet over 3 per cent. of the world's demand for coal and other combustibles. For a time, therefore, the effort should be made to use oil fuel only for special purposes in particular localities. The board regards the engineering or mechanical feature of the liquid-fuel problem as having been practically and satisfactorily solved. For manufacturing purposes the financial and supply features are the only hindrances to the use of crude petroleum as a standard fuel. For mercantile purposes the commercial and transportation features of the problem are existing bars which limit the use of oil fuel in merchant ships."

Automobile for Gold Seekers.

PROF. GILBERT E. BAILEY, of San Francisco, Cal., U. S. A., has built an automobile which he will use in prospecting for gold in the famous Death Valley in southern California—a region which has been the graveyard of hundreds of explorers who have fallen victims to the awful heat and desolation. It is absolutely devoid of water and vegetation, and its reaches of blistering sand are strewn with the bleaching bones of its victims—men, horses and cattle. Every one knows this region is rich in minerals, but parties that have ventured into it even in winter are forced to carry a large outfit to guard against death by thirst. For three prospectors eight horses are necessary, six being devoted to hauling foodstuff. This makes travel slow. Professor Bailey's automobile is a strong runabout, to which he has made a number of attachments for carrying implements and supplies. He will test its capacity by some preliminary trials, after which he will enter the desert.

Cooking by Electricity.

THE use of electricity for domestic purposes in the United States has extended to the kitchen, where it has greatly simplified the labor of cooking. Of electric cooking apparatus there are innumerable devices such as portable stoves, saucepans, tea-kettles, brazers, boilers, broilers, coffee-pots, electric ovens, griddle cake cookers, waffle irons, water urns, etc. Then there are numerous other household electric devices that are extremely handy, but which may not be properly classed as kitchen utensils, such as ship-food warmers, immersion coil heaters which may be inserted in any kind of a vessel and used for heating liquids.

Other domestic uses of electricity are interesting. Electric heating pads for the application of heat to the human body is as great an improvement over the hot water bottle as the latter was over the hot brick which our forefathers used. In the electro-therm, as this new device is known, the heating units are covered with soft lambs' wool and as high a temperature as 180° Fahrenheit may be easily maintained or a lower degree of heat may be had to suit the exigencies of the case.

Electric curling irons for the lady traveler is a dainty toilet accessory that has found great favor with the fair sex and more than fifty thousand of these appliances are now in use. They may be attached to any lamp socket, for they use the same amount of energy as an incandescent lamp; when the curling irons are removed the current is automatically cut off.

Cigar lighters, which use the current only while the cigar is being lit, is another unique adaptation of the electric unit to the needs of the public. It is operated by merely pressing a button, when the current strikes a little arc between two carbons.

Soldering-irons operated by electricity show the popularity of labor-saving tools. These irons are extensively used in telephone work. Pitch-kettles, sealing-wax pots, flask-heaters, instrument-sterilizers and flatirons nearly complete the list of stock-in-trade appliances. All kinds of heavy machinery, however, requiring heat in the processes of manufacture, as laundry machines, paper calenders, etc., are making use of these up-to-date devices.

Among the many and varied applications of electric heating to the arts, sciences and industries, none are more curious than that of hatching chickens. One of the greatest difficulties of artificial incubation is to keep the temperature constant. It is impossible with oil lamps, but with electricity the matter becomes exceedingly easy:

Thousands of electric heating units have been supplied to the various industries throughout the world, and these embrace electrically operated irons in hat manufactories, drying molds for the making of artificial teeth, branding irons for cigars and cigar-boxes and other places too numerous to mention.

New Thing in Burglar-Proof Safes.

TO the genius of an inventor living in Joplin, Mo., U. S. A., the world is indebted for a burglar-proof safe which seems to be really burglar-proof. The outside door of this safe opens a cross-bar cage and is opened by means of a time lock. When the time designated arrives the door swings open and a powerful electric current is shut off. This current is calculated to kill any one who is so foolhardy as to touch the outside of the safe with a conductor of electricity, such as a burglar tool. Every portion of the surface is heavily charged by a battery, which is enclosed in the inner depths of the safe. In order to reach the interior, the battery and the valuables, it is necessary to work a combination on the second door, which is also on a cross-bar cage. The bars of the second cage run contrary to those on the outer cage and they are also steel. The money-drawers are opened with keys. The inside of the safe is lined with a substance composed of asbestos, cement and plaster of paris which the inventor claims is absolutely fireproof.

Using Heat from Friction.

EXPERIMENTS are now in progress in St. Louis, Mo., U. S. A., with a novel system of heating for large buildings. The heat is produced by friction. The invention consists of a steel tube surrounded by a jacket, and inside of the tube a wooden roller, cut into four triangular sections and arranged about a steel shaft. A water chamber outside of the tube is 10 inches in diameter. A two-horse-power motor is used to operate the machine, and tests have shown that at a speed of 700 revolutions it will heat 990 gallons of water to a temperature of 160 degrees in fifty-five minutes. At 700 revolutions steam is produced in five minutes from the time the machine is started, and during the next forty-five minutes steam is made at the rate of a pound a minute. From that time on there is a gain of ten pounds of steam every three minutes. It has been shown that the machine will produce the wonderful gain of 200 pounds of steam an hour.

American Petroleum Product.

CALIFORNIA is now foremost among the United States of America in the production of petroleum, her output for last year having been 24,382,472 barrels. Ohio came next with 20,480,286 barrels; other States following thus: Texas, 17,955,572; West Virginia, 12,899,395; Pennsylvania, 11,355,156; Indiana, 9,186,411; New York, 1,162,978; Kansas, 932,124; Louisiana, 917,771. Small quantities were produced in Kentucky, Tennessee, Colorado, Wyoming and three or four other States.



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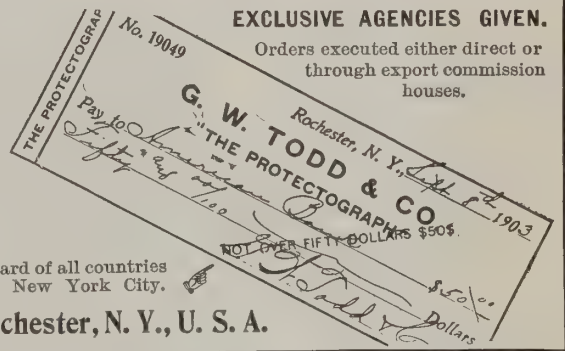
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3 Dozen Pairs.....	4 x 5	6 Dozen Pairs.....	7 x 9
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10 1/2 " ".....	6 x 8	1 " ".....	10 x 12

Weight, boxed ready for steamer, 200 pounds.
Size of case, 42x23x18 inches.

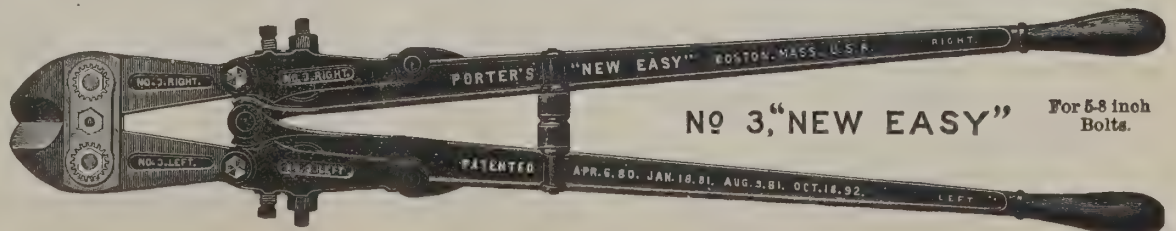
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Best in the World for Cleaning and Polishing Gold, Silver, Cut Glass, Nickel and Plated Ware.

N. B.—CANDO is free from all injurious substances, being a rapid cleaner and brilliant polisher.

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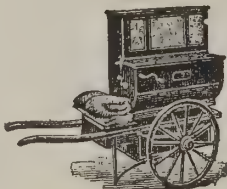
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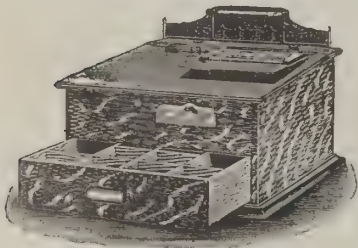
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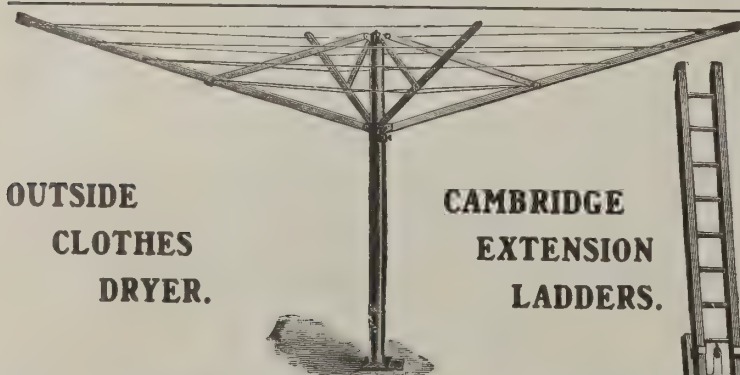
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SOMERVILLE, MASS., U. S. A.

Full line of Step Ladders,
All kinds of Single Ladders, Lawn Settees,
Ironing Tables, Wash Benches, Clothes
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Patent Fire Ladders.

Orders filled through commission houses.
Correspondence solicited. Catalogue "M" on application.

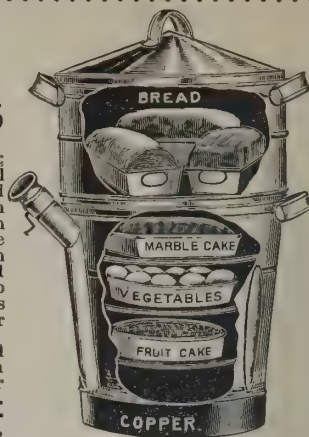
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FREE Book of 36 pages, printed in colors; handsomely illustrated; tells all there is to know about steam cookers—round or square. The 1904 models of "Ideal" Steam Cookers are entirely new in principle, design and special features. The only steam cookers made in which both round and square have whistles to call the cook when water is needed. Seamless copper tank bottoms.



Cooks a whole meal over one burner, on gasoline, oil, gas or common cook stove. Reduces fuel bills one-half. Agents wanted.



We Want Foreign Agents, and to get them quickly, we are making the following liberal proposition for this month:

No. 20 Sq. Copper Tank

Retails \$6.50 Each.

13-gallon food capacity. 12 Cookers in a box. Measurements and weights of boxes holding 12:

Gross weight, 210 lbs.

Net weight, 144 lbs.

Cubic feet in 12—28.

\$39 doz., f. o. b. N. Y.

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Retails \$5.00

10-gallon capacity. 12 Cookers in a box, nested, solid. Measurements and weights, 12 in a box:

Gross weight, 150 lbs.

Net weight, 120 lbs.

Cubic feet in 12—11 1/2.

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These are our best sellers, but we make thirty different sizes of Cookers. Boxed ready for steamer. Order direct or through export house; in latter case, mail duplicate order to us to avoid errors.

We manufacture a full line of Kitchen Specialties and Blue-Flame Wickless Oil Stoves.

TOLEDO COOKER CO., 2301 Albion St., Toledo, O., U. S. A.

AGENTS WANTED EVERYWHERE FOR

THE BEST LIGHT



The Cheapest and Strongest Light on Earth.

Makes and burns its own gas. It is portable; hang or set it anywhere. Requires no pipes, wires or gas machine.

A Safe, Pure White, Powerful, Steady Light. Permitted by Fire Insurance Underwriters.

No wicks to trim; no smoke or smell.

**SUPERIOR TO ELECTRICITY
OR ACETYLENE
AND CHEAPER THAN KEROSENE.**

Saving effected by its use quickly pays for it. Over one hundred styles of fixtures for indoor and outdoor use. This is the Pioneer Incandescent Vapor Gas Lamp. It is perfect. Beware of imitations.

Write for Catalogue, Lists and Discounts. Orders received direct or through exporting houses.

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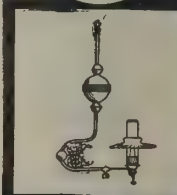
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Celluloid Combs.

OUR SPECIALTIES ARE

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New
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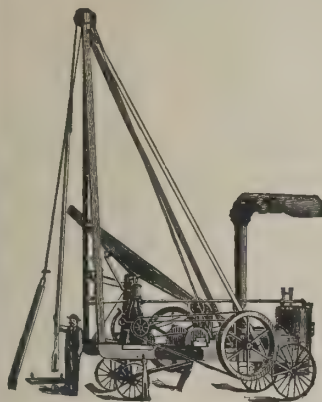
For Coughs, Colds, Bronchitis, Asthma, Catarrh, the Hacking Cough in Consumption, and numerous affections of the Throat, giving immediate Relief. They have received the sanction of physicians generally and testimonials from eminent men throughout the world. All dealers in medicines and proprietary goods can recommend them with confidence. Caution.—"Brown's Bronchial Troches" are sold only in boxes or bottles, with facsimile of the proprietors on outside wrapper of the package.

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There is good, pure water in the ground if you know how to get it. The ordinary dug well is apt to be contaminated from surface drainage.



THE PORTABLE STAR DRILLING MACHINES

will tap the stream in the best possible manner, and will insure an abundant supply of good, pure water.

An energetic man may become rich doing well digging for his neighbors. With one or more of our machines he can build up a permanent and successful business.

The Star Drilling Machines are made in Ten Sizes. Will Drill 250 to 2500 Feet.

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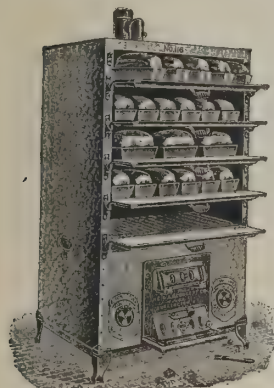
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We make the kind the United States Government buys and which is being adopted by Foreign Governments as well as by those interested in the economical baking of the products of flour, meat and vegetables.

Either Coal, Wood, Natural or Artificial Gas can be utilized as Fuel. Used by Bakers, Hotels, Steamships, Restaurants, Confectioners, Colleges, Asylums, Private Residences and in Japanning, Enameling and Core Baking.

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Our Catalogue No. 1 describes

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of many sizes, both traction and non-traction, for wells 50 to 1000 feet deep, and gives full illustrated instructions for operating.

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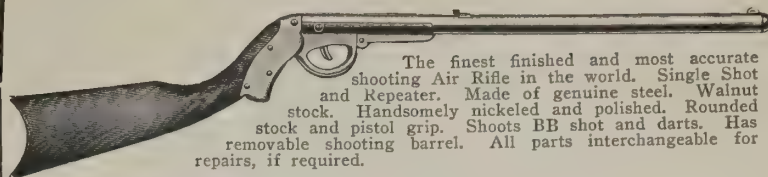
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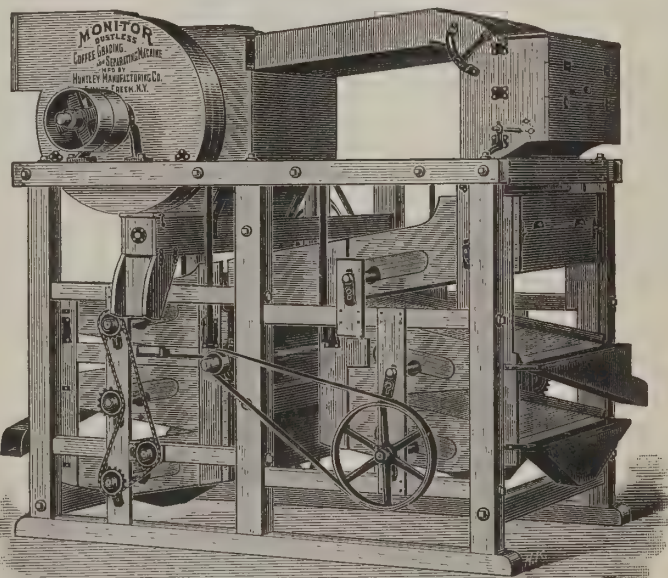
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MONITOR COFFEE SEPARATOR AND GRADER.



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Made in five sizes, and capacities from 6 to 30 bags per hour.

Monitor Rice Separators are used more extensively in the rice industry than any other make of machine.

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Adjustable Every Way While Running.

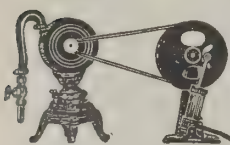
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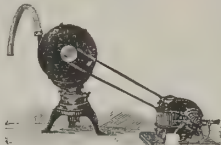
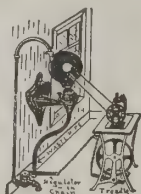
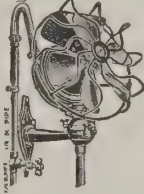
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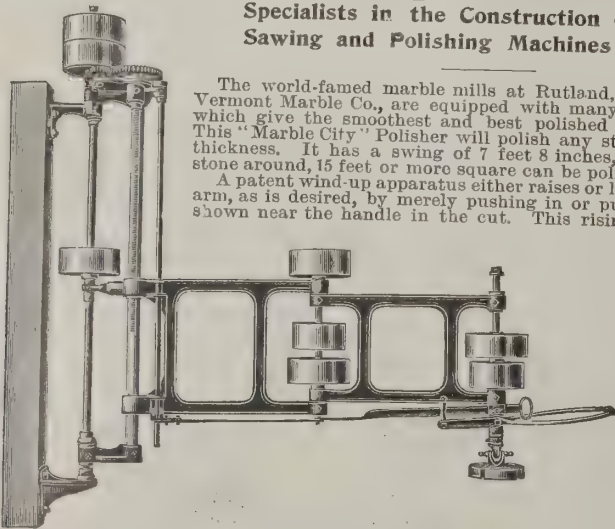
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We carry a large number of these in stock, so that prompt delivery can be made.

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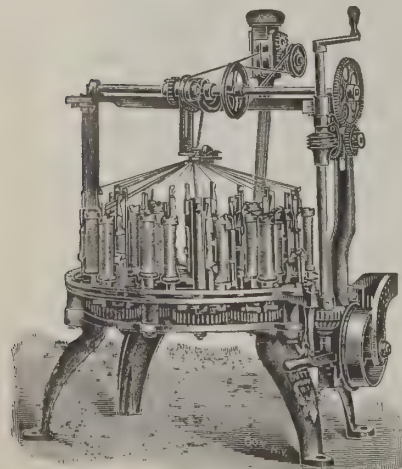
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Operated
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If you haven't, you are needlessly wasting fuel every day and consequently wasting money. If fuel is difficult to procure—if it is high in price—if you value the efficiency of your boiler, you should send at once for a

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The only known and successful device for removing scale and soot from water tube or tubular boilers. Is absolutely guaranteed to do as represented or money refunded.

From 20 to 60 per cent. in fuel saved; prolongs the life of boilers, and is the means of avoiding possible accidents. Our Diamond Cleaner is used by the largest steam users in almost every part of the world, to whom we can refer you upon application. Every Diamond Machine bears this trademark as below, and is also stamped with our name.

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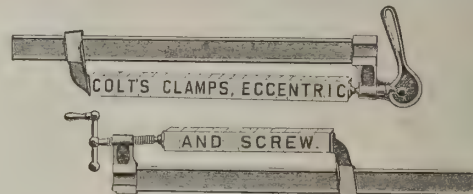
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Colt's Eccentric and Screw Steel Bar Clamps.

Quick
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Time
Saving.



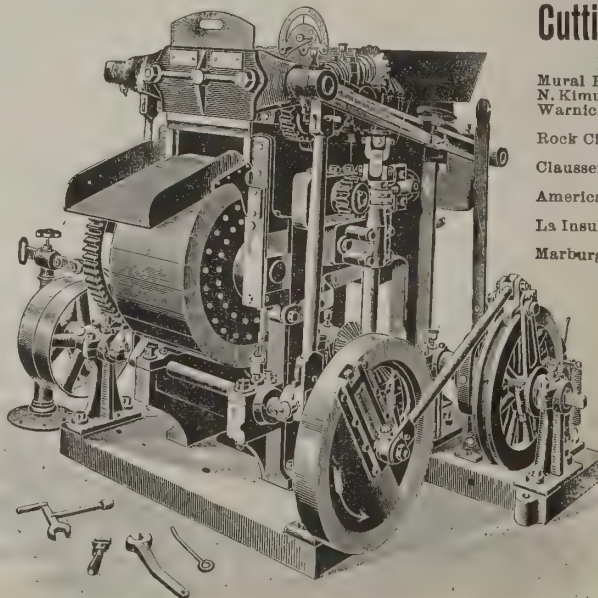
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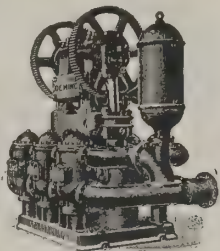
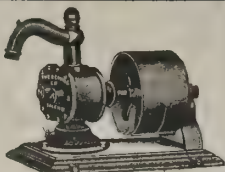
Cistern and Pitcher Spout Pumps, Hand and House Force Pumps, Deep Well Pumps and Standards, Iron and Brass Cylinders, Windmill 3-Way Pumps and Standards, Triplex Power Pumps, Rotary Pumps, Hydraulic Rams, Irrigating Pumps and Cylinders, Spray Pumps, etc., etc.

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TRADE MARK.



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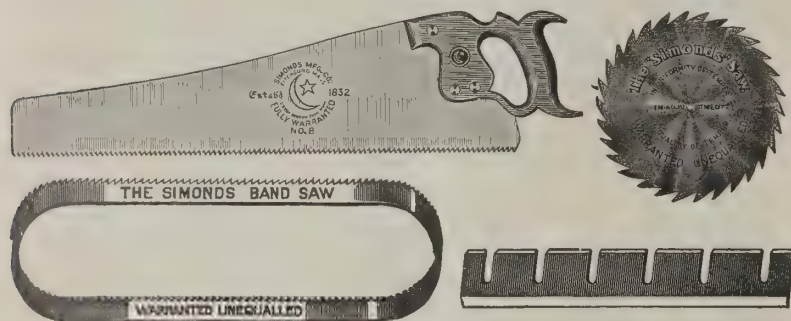
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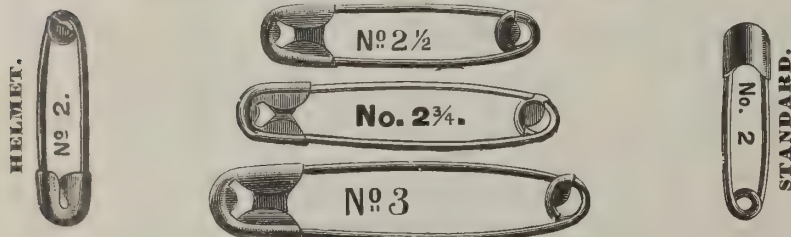
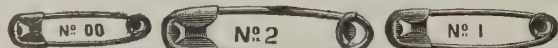


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HAVE THE MOST EFFECTIVE GUARD TO PREVENT CATCHING OR TEARING OF MATERIAL
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CONSOLIDATED SAFETY PIN CO.,
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Just the Thing for the Kitchen.

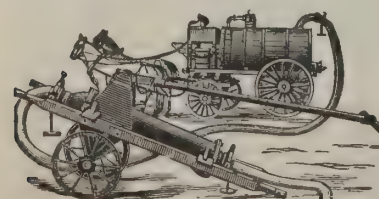
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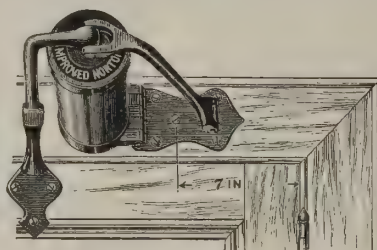
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Norton Door Check and Spring.

Our regular checks are made in six sizes, to fit any size door; are either right or left hand and may be applied to either side of a door without change.

Controlled by air and a strong spring. The oldest and most reliable check made. Orders filled through commission houses. Correspondence solicited. Catalogues on application.

LIST PRICES.

No. 00.....	\$10.00
No. 0.....	7.00
No. 1.....	6.00
No. 2.....	5.00
No. 3.....	4.00
No. 4.....	2.00

Subject to Discount.

BOSTON, MASS., U. S. A.

HYDRAULIC BALING PRESSES.

For Baling Cotton, Wool, Rags, Hemp, Etc.

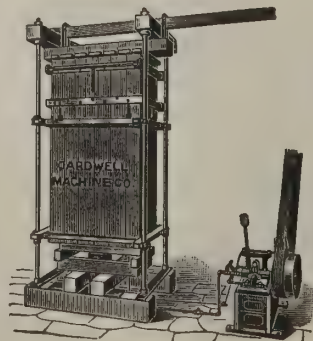
Simple, compact and very powerful; worked by either hand or steam power; not liable to get out of order and very durable; they are the best baling presses made.

Prices from \$175 to \$350, according to size.

The Hydraulic Press is the most powerful press made.

COTTON SEED OIL MILLS. We make various sizes, of capacity from 5 to 150 tons of seed per day. Our mills embrace all the modern improvements, and will give the best results. We will erect and complete, guaranteeing capacity.

Manufacturers of Smoking and Plug Tobacco Machinery.



THE CARDWELL MACHINE CO., Richmond, Va., U. S. A.

HOPS FOR EXPORT

OUR HOPS ARE CAREFULLY SELECTED AND PUT UP FOR SHIPMENT TO ALL PARTS OF THE WORLD.

DOLE BROS.' "SUPERIOR" HOPS—In cases containing 20, 30 or 50 lbs. each; in packets of 1 lb., $\frac{1}{2}$ lb. or assorted.

DOLE BROS.' "EXTRA" HOPS—In cases and packets same as above.

DOLE BROS.' "SPECIAL" HOPS—Put up in Duck-wrapped bales containing 10 lbs. each.

ALSO HOPS IN LARGE BALES FOR BREWERS.

Orders promptly executed through the leading commission houses. Correspondence solicited.

DOLE BROS. HOPS AND MALT CO.,

101 Commercial St., BOSTON, MASS., U. S. A.

EVERY HEEL IS A SALESMAN.

THAT'S WHY FOSTER FRICTION PLUG RUBBER HEELS ARE SELLING SO FAST.

Every Pair Sells from Two to Fifteen Pair.

It is a RECORD and a FACT that one pair of FOSTER HEELS proved so satisfactory to the wearer that 15 pair have been sold on this one party's recommendation.

'ELASTIC TIP CO., Boston:
'Dear Sirs—I have worn your Foster Rubber Heels on slippery pavements, on ice and snow, and they positively do not slip. They are simply perfect. Yours truly,
'N. E. VAN VOORHIS, Newton.'

"MERIT ALWAYS WINS"

And that's why people are discarding their rubber heels and putting on the Foster, appreciating the many advantages which the Foster Heel has over all other makes.

FOSTER RUBBER CO., 370 Atlantic Ave., BOSTON, MASS.



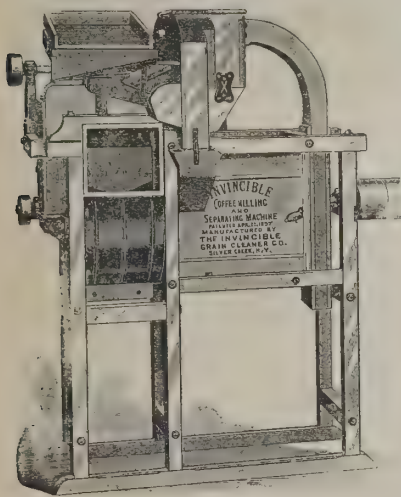
The Invincible Coffee and Spice Milling and

Separating
Machine



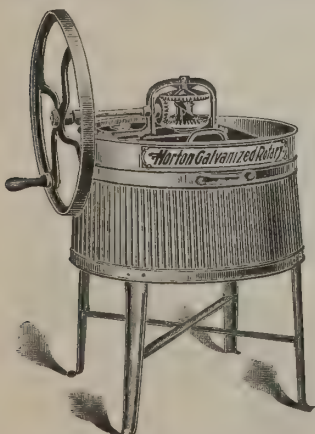
This machine will mill coffee and spices perfectly without breakage or waste. It is complete in itself. It will thoroughly separate the coffee from foreign substances, and then clean and polish the same so that it is ready for the roaster. Its perfect ventilation increases its efficiency. In cleaning and polishing coffee it does not break the berry as is frequently the case with other milling machines. We shall be pleased to send to all who are interested full particulars. Please order direct or through any export agency.

THE INVINCIBLE GRAIN CLEANER CO.
SILVER CREEK, N. Y., U. S. A.
European Offices: 37 & 38 Seething Lane
London, England



THE LATEST CREATION IN WASHING MACHINES!!!

Horton Galvanized Rotary Washer.



Horton Galvanized Washer No. 9.

Built of steel throughout, including the legs, and heavily galvanized after being constructed.

Lighter, stronger and more durable than wooden machines.

Will not rust or rot, and not affected by climatic changes.

For Foreign Markets Only.

Upon receipt of \$72.00 in U. S. gold or its equivalent we will crate and deliver f. o. b. (shipped K. D.) New York, Boston or Baltimore, 12 Horton Galvanized Rotary Washers No. 9.

Each washer measures, crated, 8 cubic feet. Each washer weighs, crated, 80 lbs.

Our new catalogue mailed postpaid.

HORTON MANUFACTURING CO.
FORT WAYNE, INDIANA, U. S. A.

The Premier American Shoe Polishes OKOLITE,



An Oily Paste Polish for ALL Black Leathers, Also

Brown Okolite

For ALL Russet and Tan Shoes.

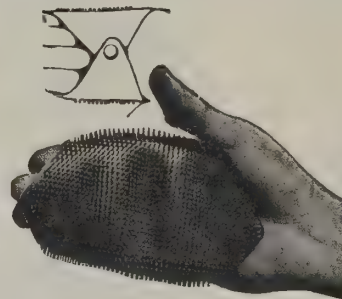
We are Manufacturers of over 60 varieties of Shoe Dressings, Polishes, Harness Oils, Etc.

SPECIAL INTRODUCTORY OFFER TO FOREIGN BUYERS:

6 dozen Black Okolite, 3 dozen Brown Okolite, 1 dozen small and 1 dozen large Black Combination, 1 dozen small and 1 dozen large Russet Combination, 1 dozen Patent-Leather Polish, 1 dozen Easy Method Dressing and 1 dozen 7 Oil Blend Dressing for Ladies' Shoes. This entire combination offer in one case for \$12.00 in U. S. currency. Orders executed either direct or through export commission firms. Correspondence solicited.

The Burckard Blacking & Oil Co., BALTIMORE, U. S. A.

Buckeye Toilet Brushes



Are Indispensable for
Complexion Beautifiers.

If applied properly will remove

**BLOTCHES,
BLACKHEADS and
WRINKLES.**

Orders filled through commission houses. Orders solicited from responsible wholesale drug houses, who can buy them in quantities.

MANUFACTURED BY

THE SPRINGFIELD TIRE & RUBBER CO.

SPRINGFIELD, OHIO, U. S. A.

VULCANIZING OUTFITS

FOR THE

Manufacture of RUBBER STAMPS

A PROFITABLE ENTERPRISE.

Write for Catalogue No. 7.

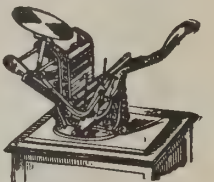
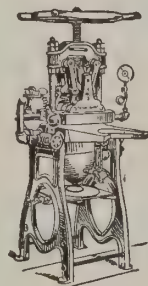
**Self-Inking HAND
PRINTING PRESSES.**

SOLID RUBBER TYPE.

STEEL DIES AND STENCIL SUPPLIES.

THE J. F. W. DORMAN CO.,

Box 993, Baltimore, Md., U. S. A.



"NEW JERSEY" COPPER PAINT

LEADS THEM ALL,

So Our Testimonials Say.

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition and American Institute, New York City.

New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

A PAINT THAT PROTECTS.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.
MILLS EDWARD, Master Schooner "Florence Shay."



MILLER BROTHERS

BUILDERS OF

CARRIAGES

IN THE WHITE

AMESBURY, MASS.

U. S. A.

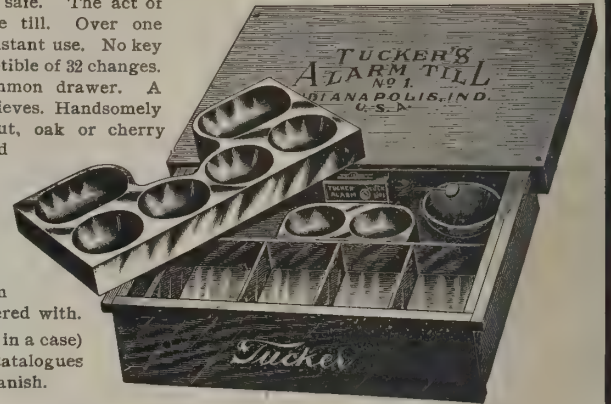
Catalogue and Prices
on Application

The Tucker Alarm Cash Till.

A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

As a piece of cabinet work, well worth its cost.

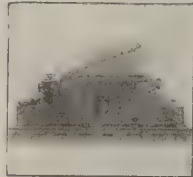
Sounds the alarm promptly if tampered with. Delivered ($\frac{1}{2}$ doz. in a case) free to vessel. Catalogues in English and Spanish.



TUCKER & DORSEY MFG. CO, Indianapolis, Ind., U. S. A.

Selling Agents: John H. Graham & Co., 113 Chambers St., New York City.

JEFFREY MINING MACHINERY.



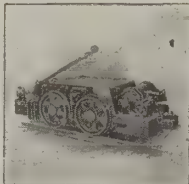
S. M. 10, 2-ton Electric Locomotive.



150 K. W.

Generators.

Electric Locomotives.



S. M. 15, 2 1/2-ton Electric Gathering Locomotive.

Our Staple Line Includes Elevating, Conveying, Power-Transmission Machinery. Catalogues Free.

THE JEFFREY MFG. CO.
COLUMBUS, OHIO, U. S. A.

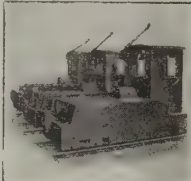
Coal Cutters.

Drills.

Complete Mine Equipment.



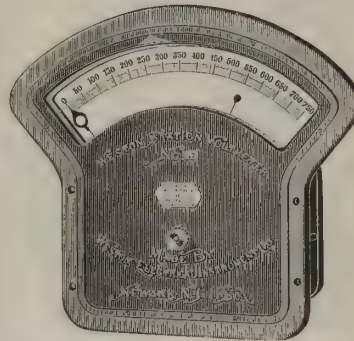
T. M. 150, 20-ton Electric Mine Locomotive.



D. M. 40, 7-ton Electric Switching Locomotives.

WESTON ELECTRICAL INSTRUMENT CO.

Waverly Park, NEWARK, N. J., U. S. A.



Weston Standard Illuminated Dial Potential Indicator. Style B.

Illuminated Dial Station Instruments.

These instruments are constructed upon the same general principle as our regular Standard Portable Direct-Current Voltmeters and Ammeters, but are much larger, and the working parts are inclosed in a neatly designed dust-proof cast-iron case which effectively shields the instruments from disturbing influences of external magnetic fields.

Berlin—European Weston Electrical Instrument Co., Ritterstrasse No. 88.

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Pierce Well Engineering & Supply Co.

136 Liberty St., NEW YORK, U. S. A.

Cable Address, "Artesianos, New York."

Manufacturers of everything required to drill and complete Wells for

WATER, OIL & GAS.

Any depth from 25 to 5,000 feet.

Also Special Tools for Soundings and Test Borings for Water and Mineral Prospecting and Developing Mines; Light, Portable Outfits operated by Man Power. We furnish Pipes, Casing, Sucker Rods, Tubing, Fishing

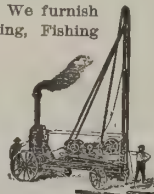
Machine for 2,000 to 4,000 ft.

Tools, Bolders, Engines, Etc.

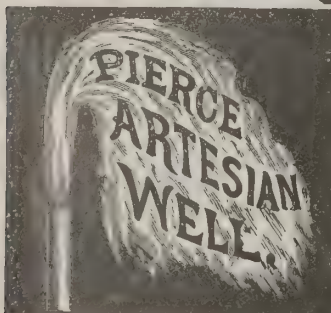
Complete Machines and Experienced Men sent to any Country or Climate. We have the largest and most varied experience of any firm in this business in America.

Catalogues with hundreds of engravings and estimates furnished on application.

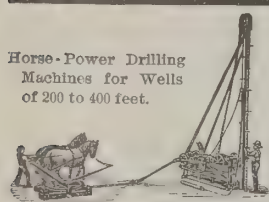
When writing, always state fully what is desired, giving greatest depth of borings required, if in Earth or Rock, and if for Water, Oil, Gas or Minerals.



Steam Rigs for 200, 350, 600 and 1,000 ft.



Horse-Power Drilling Machines for Wells of 200 to 400 feet.



HIGH-GRADE FIRE APPARATUSES.

FIRE EXTINGUISHERS, CHEMICAL ENGINES, TRUCKS,

For Storehouses, Homes, Factories, Establishments or Fire Departments.

Please pay us a visit when you come to the Exposition in 1904.

When the apparatus is loaded it will throw a stream of gas (which gas is the best fire extinguisher) at the distance of 50 feet. Any woman or child can operate it as well as an expert man. It is always charged and ready for use, but it has no pressure until the moment of using. It can be used every day, lasting a lifetime. Once discharged or used it can be charged again in one minute.



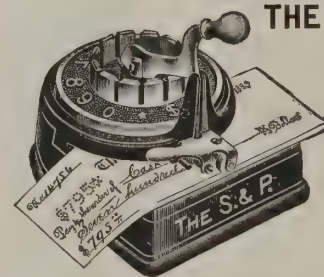
pressure until the moment of using. Once discharged or used it can be charged again in one minute.

STEMPEL FIRE EXTINGUISHER MFG. CO., St. Louis, Mo., U. S. A.

THE S. & P. CHECK PUNCH

AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.



ANY SIGN may be had in place of \$ when desired.



Net Weight 3 3/4 pounds.

The S. & P. Pinking Machine

BEST and CHEAPEST.

Cuts fancy edge on silk or cloth. Will cut Chamols Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 16 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

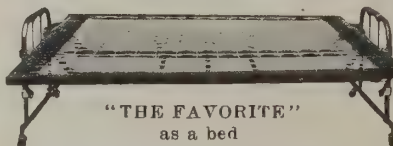
SITTMANN & PITT, Brooklyn, N. Y., U. S. A.

BATTLE CREEK IRON BED CO., Ltd.,

MANUFACTURER OF

K.-D. METAL FOLDING BEDS FOR EXPORT.

"THE FAVORITE" METAL FOLDING BED



"THE FAVORITE" as a bed

FOR FOREIGN MARKETS ONLY.

Upon receipt of \$45 (U. S. gold) we will crate, ready for transportation abroad, and deliver f. o. b. New York, 6 of "The Favorite" (Knock-Down) Metal Folding Beds. Each bed weighs 120 lbs. net; packed 2 in a crate, weigh 275 lbs. gross. Gross weight of 6 "Favorite" Metal Folding Beds, packed 2 in a crate, 725 lbs. Orders received direct or through export houses; when ordering through the latter, specify "The Favorite," and please send us duplicate of order.

Battle Creek Iron Bed Co., Ltd.,

BATTLE CREEK, MICH., U. S. A.

is the latest creation in folding beds and can be easily opened or closed by a child of five years of age. Opened ready for use "The Favorite" is a full-sized bed, being 6 feet long by 4 feet 6 inches wide. Closed "The Favorite" can be used as a "Davenport," or can be adjusted by a most simple movement to a reclining-back position, as shown



"The Favorite" as a "Davenport" Reclining-Back Position.

TRADE-MARK
REGISTERED.**A. P. W. PAPER CO., ALBANY, N. Y., U. S. A.**The largest manufacturer of **TOILET PAPER** in the world.**CORRESPONDENCE SOLICITED.****Brockton Last Co.**
LASTS IN ALL SHAPES
AND STYLES,
Manufacturers and
Exporters of FINE**FOR MEN, WOMEN, YOUNG MEN AND MISSES.**

Orders filled through commission houses.

Correspondence solicited.

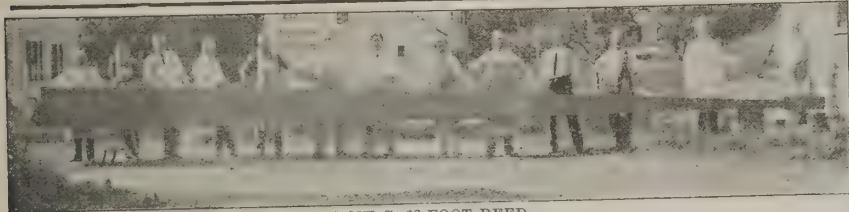
BROCKTON, MASS., U. S. A.**THE DAVOL RUBBER COMPANY, Providence, R. I., U. S. A.**
Manufacturers of the **HIGHEST GRADE OF RUBBER GOODS.**Air Beds,
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Air Pillows,
Atomizers,
Bands,
Bandages,
Bath Caps,Bed Pans,
Breast Pumps,
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Camera Sets,
Colon Tubes,
Cupping Cups,
Dental Dam,Dilators,
Face Bottles,
Finger Cots,
Gas Bags,
Gloves,
Ice Bags,Ice Caps,
Medicine Droppers,
Nasal Douches,
Nipples,
Nipple Shields,
Nursing Fittings,Obstetrical Cushions,
Pessaries,
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Rectal Tubes,Rubber Bands,
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Teething Rings,Tourniquets,
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Umbrella Rings,
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Water Bottles.

And a full and complete line of Fine Rubber Goods for the Hospital and Surgical Trade. Our new Illustrated Catalogue "D" sent free on application.

SILVER LAKE COMPANY, The Original Manufacturers of Solid Braided Cordage.
Boston, Mass., U. S. A.WINDOW SASH CORD,
RAILROAD BELL CORD,COTTON, LINEN OR
ITALIAN HEMP.

ARC LIGHT and TROLLEY CORD.

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STEAM PACKINGS, SILVER LAKE & MILLER SOAPSTONE PACKING.**THE BEST IS THE CHEAPEST:**
CLOTHES LINES,
AWNING AND MASONS' LINES,
CHALK LINES, ETC., ETC.

LOW C, 32 FOOT REED

Church, Chamber and Concert Pipe Organ Reeds
A SPECIALTY.

Workmanship and Tone Quality Unexcelled.

Samuel Pierce Organ Pipe Co.,
READING, MASS., U. S. A.**MAINTIEN BROTHERS & ELLIOT, Plainville, Mass., U. S. A.**

Manufacturers and Exporters of Solid Gold Front, Fine Rolled Gold Plate and Sterling Silver Jewelry.

New and Original Designs. Link and Lever Buttons, Studs, Scarf Pins, Hat Pins, Brooches, Silk and Metal Fobs.

Every Piece Manufactured by Us Fully Guaranteed.

Orders Filled Through Commission Houses.

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SOLID BRAIDED CORDAGE.

Trade Mark.

Massachusetts Brand.

Sash Cord,
Clothes Lines,
Railroad Cords,
Arc Light Cord,
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SEND FOR SAMPLES.

Awning Lines,
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Chalk Lines,
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SAMSON CORDAGE WORKS, - Boston, Mass., U. S. A. SAMSON BRAND.**INQUIRY OFFICE** FOR NORWAY, SWEDEN
AND DENMARK.**COLLECTION OF CLAIMS.****ASK FOR TERMS.****HEFFERMEHL & CO.,**ESTABLISHED
1895.**KRISTIANIA, NORWAY.****H. D. FOSS & CO.,** Manufacturers and
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IN BULK,

FIVE-POUND BOXES,

AND IN FANCY PACKAGES.

Orders filled through Commission Houses. Correspondence solicited. Booklet 1904 on application.

BOSTON, MASS., U. S. A.*Quality
Chocolates***The "PIPE OF PEACE."**

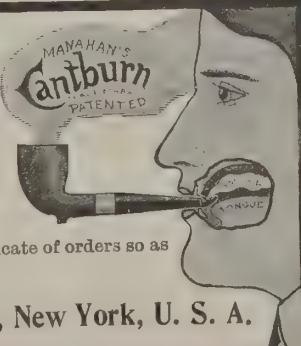
Can't burn the tongue. Always sweet, dry and clean.

Saliva can't get into the pipe, become saturated with POISONOUS NICOTINE, leak back into the mouth and give you TOBACCO HEART. No valves, absorbent piths or smoke filters used, to become filthy and spoil the flavor of your smoke, and you can smoke any tobacco.

Fine briar and hard solid rubber stem, bent or straight.

Send export orders through buying and shipping agent, and send us duplicate of orders so as to avoid mistakes.

RELIABLE AGENCIES WANTED.

The Practical Mfg. Co., 1907 Park Avenue, New York, U. S. A.**MANAHAN'S FRESH AIR LOCK**
GIVES PERFECT
VENTILATION and SAFETY Lets fresh air in
and keeps bur-
glars out. Automatically locks the
window. Any one can attach it. You
need it on every window. Your
children can't fall out if you use it.
Reliable Agencies Wanted.
1907 Park Avenue,
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J. C. F. PHINNEY, CUT SOLES, LYNN, MASS., U. S. A.

Orders filled through commission houses.
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BARNEY COMPOUND VENTILATING WHEEL.

For Removing Dust, Smoke, Steam, Heat, Foul Air, Gases. For Drying and Ventilation.

Branches in
France, Canada, Mexico.

James Hill & Sons, Adelaide, South Australia.

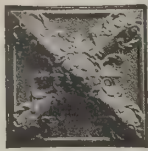
W. G. Hurdman Co., Ottawa, Canada.

Gothenburg Machine Co., Limited, Goteborg, Sweden.

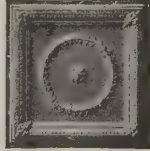
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Romanesque.



Louis XIV.



Colonial.



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Art Metal Ceiling

Exclusive and Artistic Designs Appropriate
for Any Style of Architecture.

Orders Filled Through Commission Houses. Correspondence Solicited. Write for Catalogs.

KANNEBERG ROOFING & CEILING CO., CANTON, O., U. S. A., MANUFACTURERS.

Patent Metal Shingles.
Crimped and Corrugated Iron.
Imitation Brick and Stone Siding.
Architectural Sheet Metal Work, Etc.

The Leonard Cleanable Refrigerators

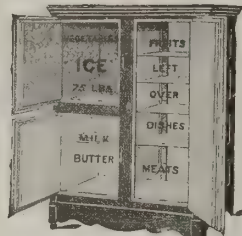
Freely Acknowledged to Be the Best in the World.
Made in Grand Rapids, Mich., U. S. A.



No. 498.



No. 73.



No. 4 & No. 6.

Single door, zinc lined.
No. 498—Size, 23x15x37\$4.50
No. 070—Size, 25x17x40..... 7.70

Double door, zinc lined.
No. 73—Size, 33x20x46\$13.10

Three doors, lined with real
Porcelain on sheet steel.
No. 4—Size, 35x22x46\$22.75

Four doors, lined with real
Porcelain.
No. 6—Size, 42x23x54 \$33.95

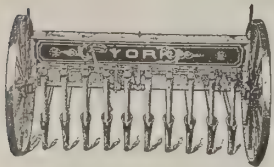
Orders received through
any exporter in New York,
Boston, Philadelphia or
Baltimore, or through
our own Export Office,
54 Warren Street, New
York. E. L. D. Hester,
Mgr.

Our Catalogue, illustrating and describing
the various styles of Refrigerators made by us,
mailed postpaid to all
parts of the world.

Seven walls to save the ice. Air-tight locks. Sliding, adjustable shelves, and many other improvements. Outside cases, ash with quarter-sawn oak panels, dark golden finish. Walls packed with mineral wool.

These prices F. O. B. New York, Boston, Philadelphia or Baltimore, crated for export. The sizes given are: first, width across the front; second, depth from front to back; third, height. All outside measurements in inches.

GRAND RAPIDS REFRIGERATOR CO., Grand Rapids, Michigan, U. S. A.



Office:
COFFEE EXCHANGE,
NEW YORK.

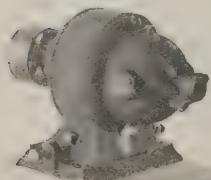
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MANUFACTURERS OF
Agricultural Implements & Machinery



Factory:
YORK, - PENNA.

Cable Address:
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ELECTRICAL APPARATUS FOR ALL PURPOSES SPECIAL OFFERS FOR EXPORT ONLY.



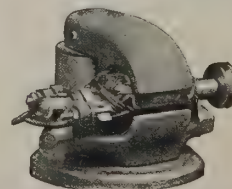
Type "R," Sparking Dynamo. Price, each, - \$15.50



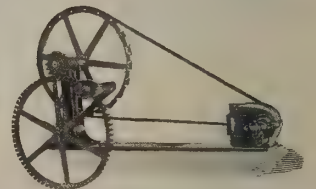
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The prices here quoted are packed, ready for shipment abroad, and delivered f. o. b. New York, Boston or Philadelphia.

Our Bulletins, illustrating and describing the various styles of Electrical Experimental Apparatus made by us, mailed postpaid.

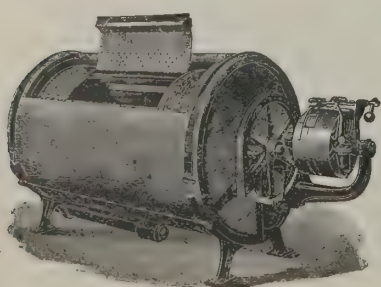


"Midget" Dynamo or Motor. Price, 6, - - \$18.00



"Midget" Dynamo or Motor, with hand power. Price, 6, - - \$34.50

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Washing Machine.

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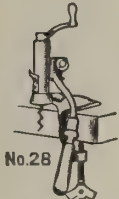
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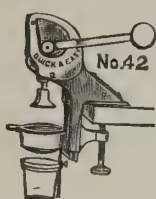
No. 1542.



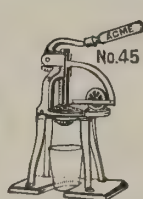
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25. Quick and Easy.
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No. 28

28. Samson
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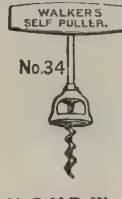
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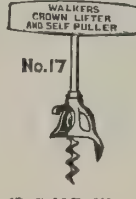
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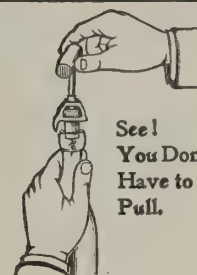
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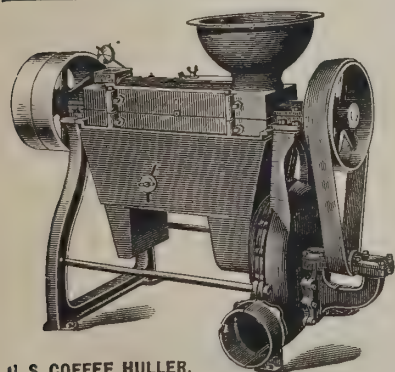
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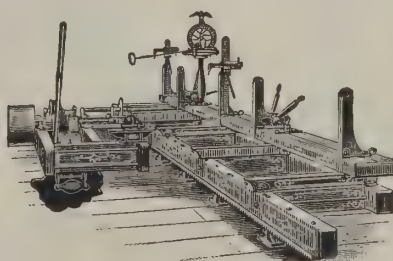


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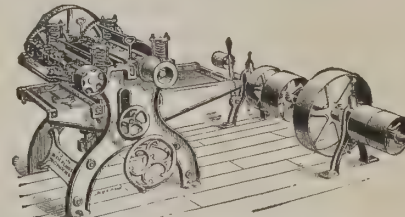
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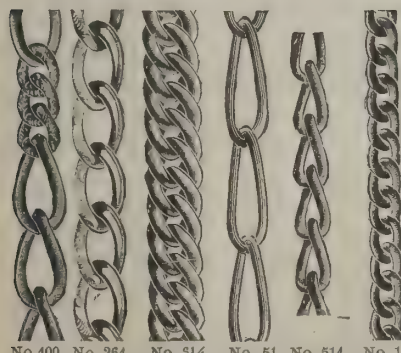


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Fine rolled plate, warranted 6 years.



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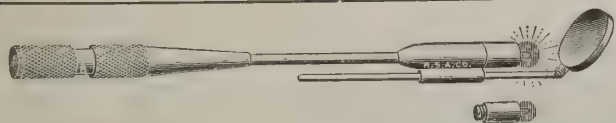
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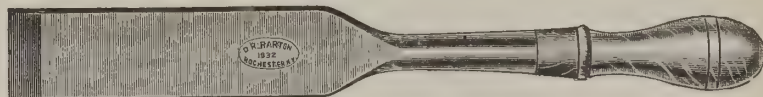
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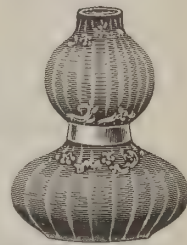
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**200 HOURS' LIGHT
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Makes and consumes its own gas, generated from kerosene oil.
The only lamp using a glass burner.

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"FOR THOSE WHO WANT THE BEST."



Fiberlite Shade and Holder.

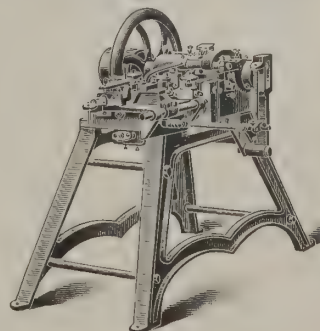
Shade made from fiber similar to that used for lining sockets. Mottled green on outside and pearl gray inside. Fiber finished under pressure which gives it a gloss finish, furnishing fine reflection for light. So tough that edges will not break and so springy that it cannot crush. Holder of heavy wire; one piece, clamps to socket with a catch. One catch and no screws. Fastens to inside of shade and any tendency to pull off only makes it hold more securely.

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MACHINES FOR MAKING

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A complete list will be found in our immense 162-page Illustrated Catalogue, which will be sent free to any address. Send for one.

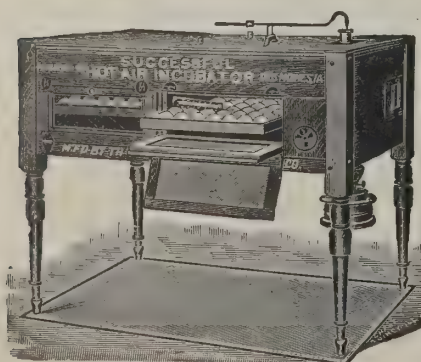
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The **"SUCCESSFUL"**

is regarded by those who have made money out of poultry raising as the greatest egg-hatching machine of the day. Heat, moisture and ventilation controlled automatically. Hatches well in the hottest and driest climates of the world. The walls of our machines are built on the refrigerator plan and packed with mineral wool asbestos. Sizes from 54 to 400 eggs. Prices from \$10 to \$37. Both hot-air and hot-water heating systems used. All hot water tanks made of 14-oz. planished copper.

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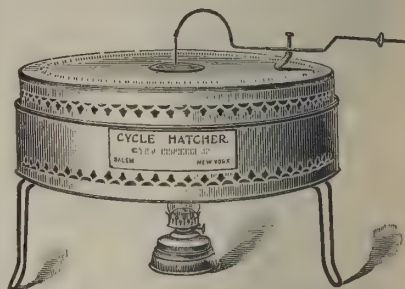
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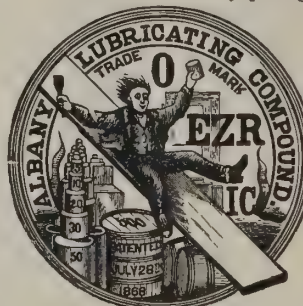
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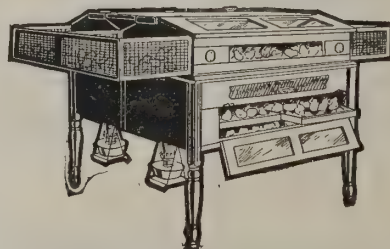
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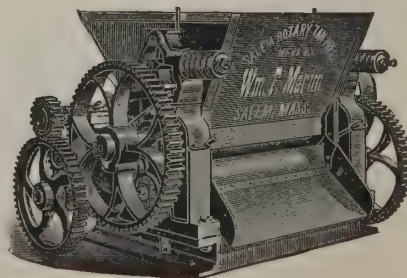
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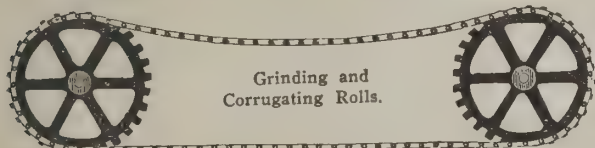


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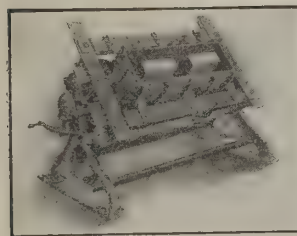
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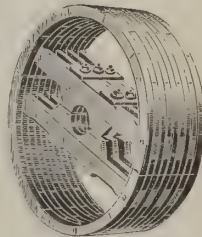
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FORT WAYNE, INDIANA, U. S. A.



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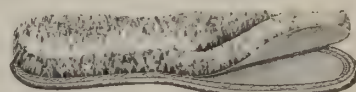
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LAMB'S WOOL SOLES

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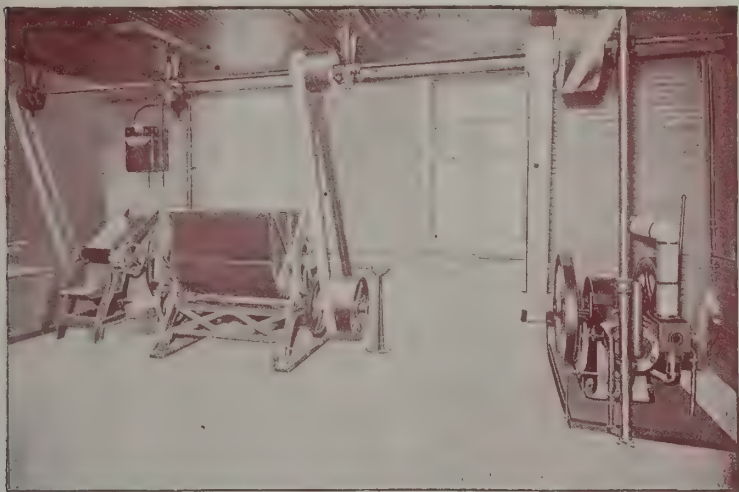
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THE JOHN C. COCHRAN CO.

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Popularity ^{WON} ON Merit.

This explains the demand for our Baker's Machinery in foreign countries.

IMITATED, BUT NOT EQUALED.

First-class in material and workmanship—just as represented.

OUR GUARANTEE GOES WITH EVERY ORDER.

We make Cake Machines, Cracker Machines, Dough Mixers, Brakes, Etc. Send for our new catalogue.

The J. W. Ruger Mfg. Co., **BUFFALO, NEW YORK, U. S. A.**



PELTON WATER WHEELS

PIKES PEAK POWER CO.

The illustration herein shown is that of Pikes Peak Power Co.'s Hydro-Electric Transmission Plant, located near Victor, Colorado. It consists of three 1,000-horsepower Pelton Wheels, operating under 1,180-foot head and direct-connected to electric generator.

This electric power is supplied to the many mines, mills and other industries in that vicinity. This plant has been running day and night for four years at practically no expense for repairs. Send for catalog illustrating many other plants of similar character.

PELTON WATER WHEEL CO.

150 Liberty Street, New York.

128 Main Street, San Francisco.

75% OF YOUR PAINT BILLS SAVED BY THE USE OF OUR PAINTING MACHINES AND READY=MIXED COLD=WATER PAINTS

Read the following from one of the largest painting contracting firms in the United States:

St. Louis, Mo., January 30, 1904.

THE HOOK-HARDIE COMPANY, Hudson, Mich.:

Gentlemen—In reply to your letter of the 25th inst., our contracts on the buildings of the LOUISIANA PURCHASE EXPOSITION amount to something over 12,000,000 SQUARE FEET, all of which is practically completed at this writing, and at least 95 PER CENT. OF THIS WORK WAS DONE WITH THE MACHINES WE BOUGHT FROM YOU. We examined all of the machines on the market and tested quite a few, finally deciding on your machine and one made by another firm. Shortly after starting work we dropped the other machine entirely on account of the large amount of time lost by the machine getting out of order. We also ran two lines of hose from your machine without increasing the number of men on the pump, something we could not do with any of the other machines, thus increasing the efficiency of both machine and men employed 100 per cent.

WE TAKE PLEASURE IN STATING THAT, IN OUR ESTIMATION, YOUR MACHINE IS FAR SUPERIOR TO ANYTHING ON THE MARKET.

THE COLD-WATER PAINT USED AMOUNTED TO ALMOST 400,000 POUNDS.

Respectfully yours,
BUILDERS' CONTRACTING COMPANY.



No. 3 "Rapid" Painting Machine.

Our Ready=Mixed Paints

are made from pure minerals, ground with a liquid chemical into a thick paste, which only requires the addition of water to be ready for instant use.

Our Ready-Mixed Paints are

**WASHABLE,
WEATHER-PROOF,
FIRE-PROOF,
SANITARY**

and Cost but One-Tenth (1-10) as Much as Oil Paint.

Made in WHITE and a variety of colors.

Packed in strong, iron-hooped barrels, half-barrels and kegs.

Our booklet, entitled "Your Painting Bills Made Smaller," contains valuable information concerning Paint and Painting Machines, a copy of which will be mailed postpaid to any part of the world.

THE HOOK-HARDIE CO., **MANUFACTURERS,** **Hudson, Mich., U.S.A.**

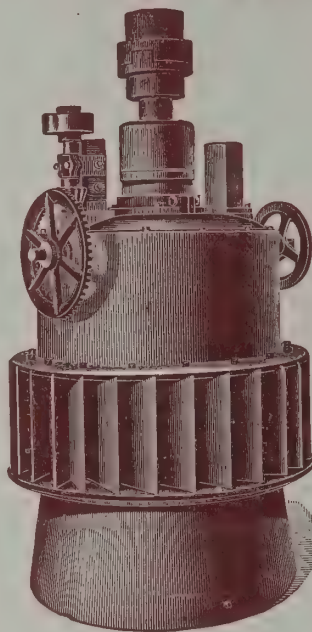
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The "New American"

IS THE

Turbine for Export.

Why?



Strength, durability and interchangeable parts reduce repairs to a minimum.

Great power for the diameter.
Economy in use of water.

Vertical or Horizontal Installations
to meet requirements.

Our Catalogue, which will be mailed on request, furnishes detailed description.

We also manufacture Gas and Gasoline Engines, Paper and Pulp Mill Machinery, and a full line of Power Transmission Machinery.

THE DAYTON GLOBE IRON WORKS CO.,

DAYTON, OHIO, U. S. A.

We Make the Largest Line of SAW MILL MACHINERY in the World.

The Greatest Lumber Maker Is the Circular Mill.

THE BEST CIRCULAR IS THE

LANE'S PATENT LEVER SET.

Highest Award—Gold Medal at the South Carolina Interstate and West Indian Exposition.

Adapted to all kinds, sizes and lengths of logs; any size from 3,000 feet up daily capacity; single or double, right or left hand.



No. 3 MILL.
With Center Guide for Steam Feed.
Can furnish with Heavy Friction Feed for Water Mills, also with Steel Trucks on Steel Axles extending across the Carriage and Steel Rail Track, instead of Chairs and Rails and Center Guide, if preferred.
Right or Left Hand, Single or Double.

LANE MANUFACTURING CO.,

MONTPELIER, VERMONT, U. S. A.



We also manufacture Saw-Mill Set Works, Dogging Devices, Etc., Water Wheels, L.O.; Jacks, Gaunters and Niggers, Drags, Swing and Friction Feed Cutting-Off Saws, Live and Dead Rolls, Edgers, Trimmers, Cutting-Off Tables, Lath, Shingle and Tapboard Machines, Planers and Matchers, Transmission Machinery and the Anderson Patent Traveling Frames.

Circulars and Prices on Application.
Specify "LANE" and when ordering, to avoid errors, please mail us a duplicate of order.

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PITTSBURG PA

MANUFACTURERS OF

ALL KINDS OF SUPPLIES FOR

OIL AND GAS WELLS.

Derricks and Rig Irons,
Boilers and Engines,
Drive Pipe Casing and Tubing,
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Manila and Wire Rope,
Pipe Line Supplies.

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We give careful attention to export orders.

Write for our 1901 Illustrated Catalogue.

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PITTSBURG, PA., U. S. A.

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The American Exporter

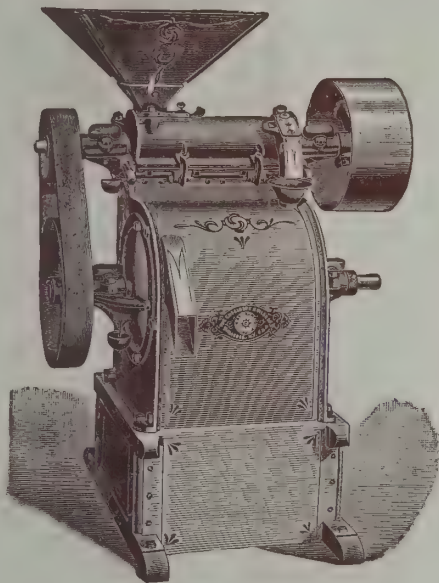
WITH WHICH IS INCORPORATED
The American Mail and Export Journal.

Vol. LIV.

NEW YORK, NOVEMBER, 1904.

No. 6.

Rice and Coffee Hulling Machinery



Improved Rice Huller and Polisher.

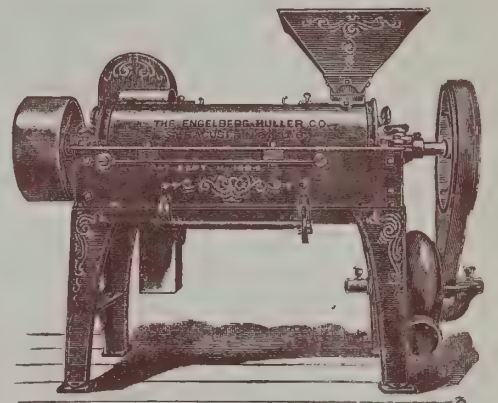


OUR RICE HULLER

Is the only machine that will take rough rice and in one operation make it merchantable. For simplicity, durability and economy has no equal. They are used on plantations, and also in the largest mills. Both the Coffee and Rice Hullers are made of iron and steel, and can be knocked down and packed for mule transportation if desired.

OUR COFFEE HULLER

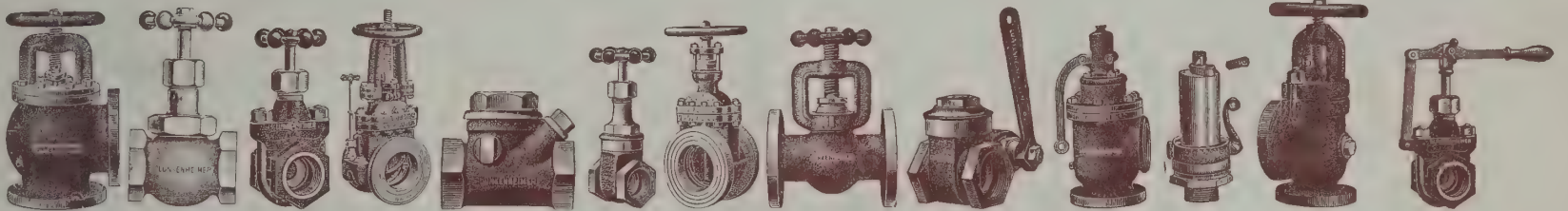
Will hull pulped or cherry coffee without breaking or leaving unhulled a single grain. The products will come out clean, polished and free from hulls, ready for bagging, all in one operation. It is the Only machine that will grind the hulls fine, so that they may be sucked by the blower through the screen underneath the machine, leaving every grain of coffee inside of the machine, no matter how small it may be.



Latest Engelberg Coffee Huller.

SEND FOR CIRCULAR OF OUR NEW MACHINES, WITH PRICES AND ALL INFORMATION.

THE ENGELBERG HULLER COMPANY, P. O. Box B,
Syracuse, N. Y., U. S. A.
Export Office: 333 Produce Exchange, New York City.



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LUNKENHEIMER VALVES are made in endless variety for every requirement, in standard sizes, of bronze and iron, for medium and extra heavy pressures. None but high-grade materials and skilled workmanship enter into their make-up. Subjected to rigid test and inspection before shipment. Specify "Lunkenheimer" make and order from any leading export house.

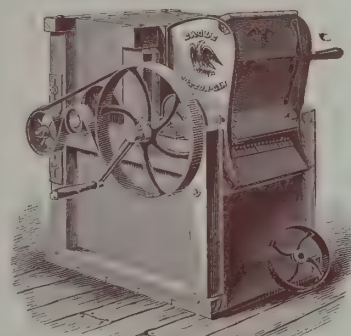
Write for Catalog of Superior Brass and Iron Valves, Whistles, Cocks, Injectors, Lubricators, Oil Pumps, Oil and Grease Cups, Etc.

THE LUNKENHEIMER CO.,

BRANCHES: New York, 26 Cortlandt Street.
London, 35 Great Dover Street, S. E.
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Philadelphia, 1428-32 Callowhill St.
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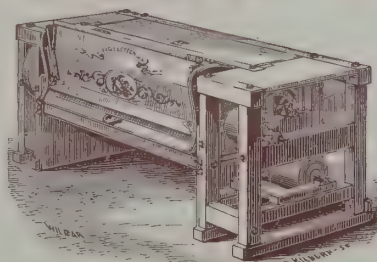


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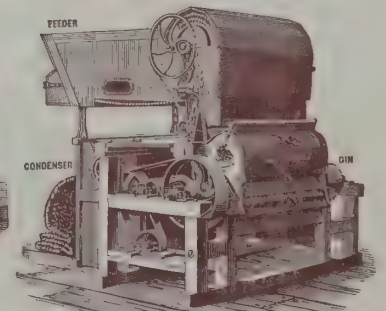
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These Gins enjoy a BETTER REPUTATION THAN ANY OTHERS OF THEIR CLASS IN EXISTENCE, and are PREFERRED to all others made, on account of their STRENGTH, SIMPLICITY, DURABILITY, the amount and EXCELLENCE of the work they accomplish, and the RAPIDITY of their operation.

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Successors to EAGLE COTTON GIN CO.,

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A SPRING BLIND ROLLER THAT WORKS EASY AND SMOOTHLY WITHOUT CORDS OR SIDE ATTACHMENTS.

Highest Awards Wherever Exhibited.

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OF
IMITATIONS



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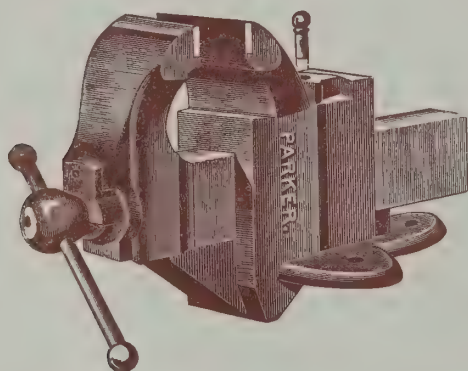
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STEWART HARTSHORN CO.

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Parker Vise

Unequaled for
Strength, Durability
and Finish.

Has stood the test of over
50 YEARS.

EVERY VISE MADE FOR
SERVICE.

The Parker Coffee Mills.

ONLY THE BEST MATERIAL AND WORKMANSHIP
USED IN THE MANUFACTURE OF THESE GOODS.

Have been in use for over 60 YEARS and will stand comparison with any Mill in the market.

We manufacture a line of

Hardware, Vises, Wood Screws,
Coffee Mills, Tinned Steel Spoons, Etc.,
Lamps and Chandeliers,
Piano and Organ Stools,
Scarfs, Music Cabinets,
Ornamental Wood Boxes
and the Parker Shot Gun.

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CHAS. PARKER CO.,
MERIDEN, CONN., U. S. A.

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DIETZ VICTOR LANTERN.

A lantern which has won
its way to the top purely on
its merits.

We claim for it the
largest number of sales
of any lantern on earth.
It represents the acme
of lantern perfection,
possessing the three qual-
ities that go to make up
a perfect lantern,

Reliability,

Durability and
Simplicity.

It is used extensively
throughout the earth,
from the icy fields of
Northern Canada to the
heated deserts of Africa.

It can be lighted,
trimmed and regulated
without removing the
globe, and is fitted with
the best Burner made
($\frac{5}{8}$ in.) and a high-grade
No. 0 Globe.

We also manufacture
the most complete line
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Outdoor

Lamps and Lanterns,
for every
conceivable purpose.

We issue a complete
catalogue (in Spanish
and English), with price-
list and discounts, and
will send same on re-
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We will be pleased to
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showing cost, laid down
in your port, of 1 gross
or more of the Victor or
any other lantern you
may select in our cata-
logue.

R. E. DIETZ
COMPANY,

60 Laight St, NEW YORK, U. S. A. Established 1840



ARCADE MANUFACTURING CO.

(Incorporated 1885.)

Manufacturers of

"Crystal," "Imperial," "Jewel," "X-Ray," "Telephone,"
"Royal Pound," "New Home" and "Favorite"

Coffee Mills.

ALSO

"Champion," "Handy" and
"Phoenix" Cork Pullers

AND

"Perfect" Lemon Squeezers.

BOTH ENTIRELY NEW.
THE HOUSEKEEPERS' DELIGHT.

THE "CRYSTAL"—A One-pound Coffee Mill, Trans-
parent (Glass) Hopper; Transparent (Glass) Receiver.
Coffee always in sight. **Sample Dozen**,
boxed ready for steamer F. O. B. cars New
York, \$6.50. Size of box, 17 $\frac{1}{4}$ x21 $\frac{1}{4}$ x29 in.
Weight: gross, 134 pounds; net, 60 pounds.

Orders received through
export houses.
Please mail duplicate
order to us.
Our illustrated catalog
mailed postpaid.

THE "CRYSTAL,"

"IMPERIAL," No. 705—
A Sunk Hopper, All-iron Top
Mill, with Hinged Cover and
Top Handle, Hardwood Box
and Dovetailed Corners.

Sample Dozen, boxed
ready for steamer, F. O. B.
cars New York \$4.00
Size of box, 15x16x20 $\frac{1}{4}$ in.
Weight: gross, 64 pounds;
net, 48 pounds.

ARCADE
MANUFACTURING CO.,
Hardware Specialties
Manufacturers,

Freeport, Illinois, U. S. A.



New
Design.

Improved
Pattern.

"IMPERIAL" No. 705.

GRAND RAPIDS DESK COMPANY,

Manufacturers of **HIGH-GRADE DESKS** OFFICE HOME **FOR EXPORT.**

ESTABLISHED 1880.

ESTABLISHED 1880.



Send for **Net Export Prices**, which include boxing and delivery F. O. B. New York.



OUR NEW ROLL-TOP DESK.
No. 516.

PRICE, \$170.00

Our 100-Page Catalogue, illustrating and describing the many styles of **DESKS** made by us, mailed post-paid to all parts of the world.

NEW DESIGNS.**SUPERIOR WORKMANSHIP.****SUPERB APPEARANCE.**

Our New Line of Desks, for All Uses, Recently Placed Upon the Market, Embody the Results of Over 23 Years' Practical Experience in Actual Manufacturing.

GRAND RAPIDS DESK CO., MUSKEGON, MICH., U. S. A.



No. 405.—Parlor Table; shaped top, 40x28 inches; made in quarter-sawed oak and solid mahogany; any finish desired. Shipped six in box; 300 pounds gross weight, 33 cubic feet.

Price, oak, each.....\$6.25
Price, mahogany, each..... 8.75



No. 58½.—Dining Table; round top, 52 inches; square top, 48 inches. Made of quartered oak and solid mahogany; fillers same wood and finish. Two in box. Gross weight, 600 pounds; average 77 cubic feet. Prices, with casters, boxed for export f. o. b. cars New York.

	8 ft.	10 ft.	12 ft.
Oak, each	\$28	\$29	\$32
Mahogany, each	33	37	41
Square table, \$1 less.			

The Finest Factory in America.

BUILT EXPRESSLY FOR EXPORT TRADE.**CAPITAL STOCK, - - - \$200,000.00**

Manufacturers of

FINE AND MEDIUM GRADES ONLY.**COMPLETE CATALOGUE UPON REQUEST.**

Imperial
FURNITURE CO.
Manufacturers of
TABLES AND SECTIONAL BOOKCASES
GRAND RAPIDS, MICH., U. S. A.

All tables are provided with patent lock for drawing top together and holding base together.
High grade in every respect.

IMPERIAL FURNITURE CO.,

GRAND RAPIDS, MICH., U. S. A.

Order through any responsible commission house.



No. 39½.—Dining Table; round top, 52 inches; square top, 48 inches. Fine selected wood, hand-carved; fillers same finish as tops. Two in box. Gross weight, 600 pounds; average 77 cubic feet.

Prices, with casters, including boxing for export, f. o. b. cars New York:

	8 ft.	10 ft.	12 ft.
Oak, round, each	\$28	\$31	\$34
Mahog., r'nd, ea.	37	41	45
Square, \$1 less than above.			



No. 44½.—Dining Table. Round top, 54 inches; square top, 48 inches. Fine selected quarter-sawed oak, hand-carved. Two in box. Gross weight, 800 pounds; 77 cubic feet average. Prices, with casters, f. o. b. cars New York:

	8 ft.	10 ft.	12 ft.
Oak, each	\$37	\$40	\$43
Square table, \$2 less.			

C. L. HAUTHAWAY & SONS,

346 Congress St., Boston, Mass.,

U. S. A.

Specialties.



Regular
4-oz. Bottle.

Best dressing put up and warranted in all respects.



Russet Leather Polish.

For polishing Russet and all fancy colored shoes.

PRODUCES A LASTING LUSTRE.

Patent Leather Polish.

For polishing patent leather shoes quickly and without injury to the leather.



PHILADELPHIA NOVELTY MFG. CO.

Thirteenth and Noble Streets, Philadelphia, Pa., U. S. A.

NOVELTY INKSTAND No. 3



American Novelties

NOVELTY (SELF-CLOSING)
INKSTAND No. 1 (large),
retail, - **75 Cents**

NOVELTY (SELF-CLOSING)
INKSTAND No. 3 (small),
retail, - **35 Cents**

PATENTED SPECIALTIES FOR EXPORT.

All our goods, numbering more than 50 different articles, are patented, controlled and manufactured exclusively by ourselves, and are sold all over the world, about one-half of our business being for export. They are all standard novelties in every sense of the word, and have been awarded numerous premiums at the universal expositions of Sydney, Melbourne, Adelaide, Barcelona and Paris, for novelty, workmanship, finish, simplicity, utility and cheapness.

WHOLESALE PRICE LIST.

Novelty Paper Fastener, \$4 doz.; Keystone Paper Fastener, \$8 doz.; Original Paper Fastener, \$12 doz.; Novelty Staples, 15c. per 1,000; Novelty Suspension Rings, 30c. per 1,000; N. Paper Clip, 75c. doz.; P. Paper Clip, 50c. doz.; Novelty Pin Clip, 90c. doz.; The Auto File, \$1.50 doz.; B B C Paper Clip, \$1.50 doz.; Balancing Board Clip, \$2, \$2.25, \$2.50 doz.; Upright Paper Clip, \$1.50 doz.; Accumulator Bill File, \$1.50 doz.; Standard Pen Rack, 1.75 doz.; Spring Folding Pen Rack, \$2 doz.; Combination Paper Weight and Clip, \$4 doz.; Pocketbook Postage Stamp Holder, \$1 doz.; Automatic Fountain Penholder, \$1.50 doz.; Novelty Inkstand No. 1, \$8 doz.; Novelty Inkstand No. 3, \$3 doz.; Novelty Slate Pencil Sharpener, 40c. doz.; Vest Pocket Glass Cutter, 90c. doz.; Novelty Pocket Knife, \$4 doz.; Novelty Hunting Knife, \$8 doz.; Novelty Pocket Screw Driver, \$4 doz.; Artist's Rotary Kit, \$5 doz.; Self-locking Door Indicator, \$2.50 doz.; Madame Louie Hair Crimper, \$2.50 great gross; Novelty Stitched Hair Crimper, \$1.50 great gross; Automatic Fisher, \$1.50 doz.; Automatic Towel Holder, \$1 doz.; Suspension Gas Wrench, 60c. doz.; Novelty Skein Holder, \$4.80 doz.; Keyring Door Securer, \$1.50 doz.; American Mincing Knife, 1, 2 and 3 blades, 75c., \$1.25 and \$1.75 doz.; The Masticator, \$1.75 doz.; Duplex Can Opener, 30c. doz.; Universal Wardrobe Shelf Bracket, \$1.50 doz.; Double Match Box, Bracket, \$2 doz.; Universal Washer Cutter, \$8 doz.; Novelty Pen Puller, 40c. doz.

Discounts 20 per cent. from above list. Send your order through any responsible U. S. export commission house. All such houses in New York handle our goods. Catalogue free. New articles constantly appearing. Goods shipped to all parts of the world.

LOVELL MFG. CO.

Erie, Pa., U. S. A.

Export Department: 54 Warren Street, New York.

Manufacturers of a full line of

ANCHOR BRAND CLOTHES WRINGERS RAT and MOUSE TRAPS.



Send for
Catalogue
and
Prices.



We make a full line of
CLOTHES WRINGERS
for the Export Trade

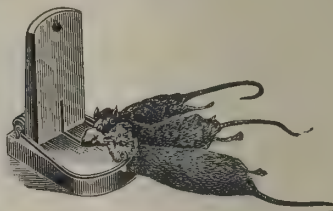


Delusion
Mouse Trap.



Rex Trap.

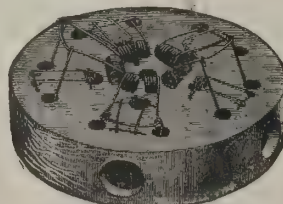
Made in two sizes:
large size for rats;
small size for mice.



Erie Rat Trap.

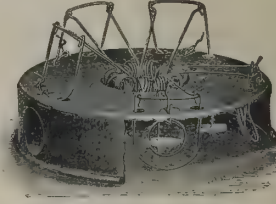
Best Trap on Earth.

RAT TRAPS—"Erie," "Star," "Grip," "Slayer," "Gem," "Yankee," "Rex," "Sure Catch,"
MOUSE TRAPS—"Delusion," "Mascotte," "Household," "Lovell's Metallic Choker,"
"Easy Setting Wood Choker," "Cyclone," "Yankee," "Rex" and "Sure Catch."



Lovell's Easy-Setting Wood Mouse Trap.

Catalogue of
Wringers
in English only
and of Rat
and Mouse
Traps in both
English and
Spanish.



Lovell's Easy-Setting Metallic Mouse Trap.

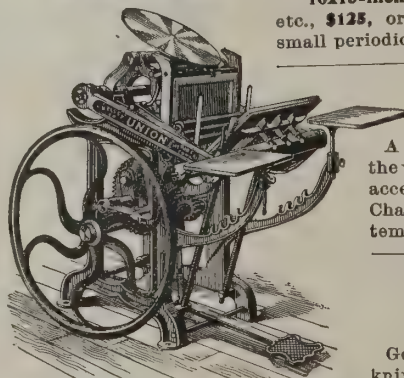


CHEAP PRINTING.

Hand presses, easy to use by man or boy. Type-setting and good printing easy by full printed instructions sent.

5x8-inch Press, for cards, circulars, etc., with 7 styles of type, ink, etc., **\$40.00.**

10x15-inch Press, with 10 styles of type, ink, etc., **\$125**, or with more type, rules, etc., for small periodical, **\$200.**

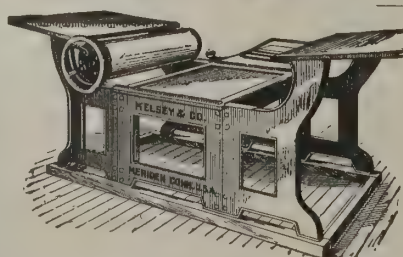


PRESS UNION.

A rapid, modern, rotary press. Best in the world. Price, with 15 styles of type, all accessories for general printing, **\$200.** Chase, 10x14 in. Larger press, similar system, chase, 11x17 in., **\$400**, outfit included.

CARD AND PAPER CUTTER.

Good hand machine with 24-inch steel knives, **\$12.00.**



Cylinder Press.

For newspaper and large announcements. Bed. 29x43 inches. Price, **\$500.** Includes 300 pounds small type, 25 fonts assorted types, inks, rules, etc., for newspaper. All our outfits complete, ready for instant use.

Catalogues, free by mail, of presses, types for all languages, paper, cards, etc. Write to our factory near New York.

KELSEY & CO., Meriden, Conn., U.S.A.



Griffin Cleaner and Paste Combination

for Cleaning and Polishing Russet and Russia Leather Shoes and all Articles made of Russet and Russia Leather.

NOTE—Our Cleaner contains no Camphor.

Our Cleaner and Paste Combination for cleaning and polishing Russet and Russia Leather Shoes (and all articles made of Russet and Russia Leather) cannot be surpassed, if used according to directions.

The Cleaner cleans and removes stains, and the paste produces a brilliant, durable waterproof polish, which is not sticky or gummy. We also make it in different colors, ox blood and brown.

Price per gross, large size.....\$14.00

Price per gross, small size..... 7.50

Discount, 10 per cent.

Griffin Russet Leather Polishing Paste.



Our Russet Leather Paste for producing a high gloss on Russet and Brown Leather Shoes (and all articles made of Russet or Brown Leather) cannot be surpassed, if used according to directions. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and yet is not a varnish.

Excellent for vici kid.

We guarantee it not to injure the leather in the slightest degree, as it is free from acids, and will not soil the finest of fabrics.

If the shoe is dirty it should first be cleaned with Griffin Russet Leather Cleaner.

Price per gross, large size.....\$6.00

Price per gross, small size..... 3.50

Discount, 10 per cent.

Our Parisian Dressing.

A Black Dressing for Ladies' Shoes. Is considered by good judges to be the best and nicest put-up 10-cent dressing on the market.



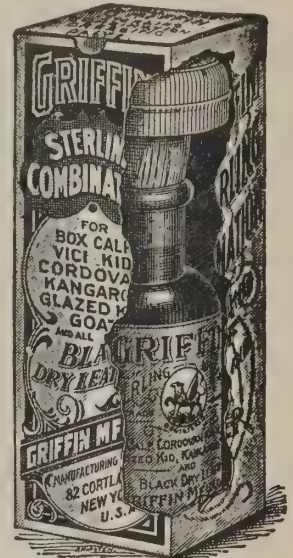
We guarantee it not to contain anything injurious to the leather. It contains oil which helps to keep the leather soft and pliable. Packed in one and three dozen boxes.

Price, per gross, \$8.00.
Discount, 10 per cent.

Griffin Sterling Combination

Our Sterling Combination for dressing and producing a gloss on shoes made of Box-Calf, Cordovan, Vici Kid, French Enamel and all fine dry black leathers. Cannot be surpassed if used according to directions. It is easily applied, polishes quickly and easily; its lustre is brilliant, durable and will not crack or scale off. It keeps the finest of leather soft. We guarantee it not to injure the leather in the slightest degree, as it contains no acid or other injurious substances.

A circular in each package giving full directions.



Price per gross, large size.....\$15.00

Price per gross, small size..... 8.00

Discount, 10 per cent.

WORTH WAITING FOR



Griffin Patent Leather Polishing Paste.



Our Patent Leather Paste for restoring the gloss to all articles made of Patent and Enamel Kid Leather cannot be surpassed. It polishes quickly and easily; its lustre is brilliant, durable and waterproof, and is not a varnish, as it leaves no coating.

We guarantee it not to injure the leather, as it is free from acids.

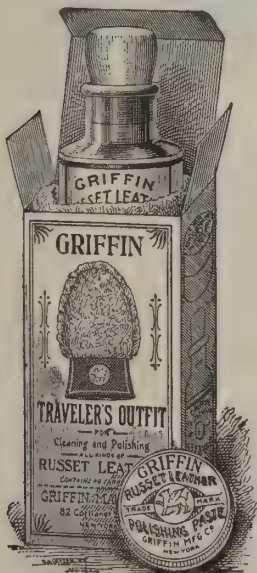
It is invaluable for brightening the saddle and blinders of harness, as the polish is waterproof.

Just the thing for manufacturers of harness to use, as it will prevent the Patent Leather parts from becoming dull.

Price per gross, large size.....\$6.00

Price per gross, small size..... 3.50

Discount, 10 per cent.



Griffin Russet Traveler's Outfit.

An excellent thing to take along when traveling.

Contains a bottle of cleaner for cleaning and removing stains. A box of our polishing paste and a polishing mitten.

Price per gross.....\$18.00

Discount, 10 per cent.

GRIFFIN SNOW WHITE.



For cleaning and re-whitening white shoes made of canvas, suede and buckskin.

Price, per gross, \$10.00.
Discount, 10 per cent.

NONE BETTER MADE AT ANY PRICE.

Send us a trial order through any commission house in New York; above prices f. o. b. N. Y.

GRIFFIN

High-Grade Shoe Polishes.

GRIFFIN M'F'G CO.,

82 Cortlandt St.,

New York, U. S. A.



Griffin Sterling Traveler's Outfit.

For Box-Calf, Vici Kid, French Enamel and all dry Black Leathers.

Put up in a carton. Contains a bottle of Sterling Dressing, a box of Polishing Paste and polishing mitten. Also suitable for Enamel and Patent Leather.

Price per gross.....\$18.00

Discount, 10 per cent.

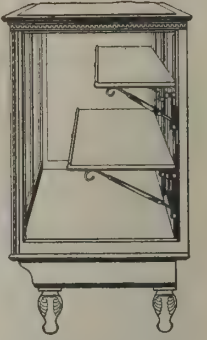
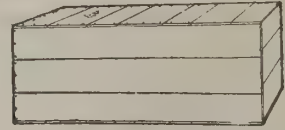
KNOCK-DOWN SHOW CASES FOR EXPORT.

SHOW CASE No. 31 is our leader for foreign markets, and is just the thing for displaying furnishing goods, chemists' sundries, dry goods; in fact, is well adapted for the display of any line of goods.

SHOW CASE No. 31 "set up" (ready for use) is 8 feet long, 42 inches high and 26 inches wide. Has 6 oxidized, copper-plated legs, giving ample room to clean under case. It is glazed with beveled plate-glass tops, and with double strength A sheet glass in fronts, ends and doors. The doors slide on ball-bearing rollers and a metal track. It is fitted with 2 wooden shelves, 10 and 14 inches in width, on nickel-plated, adjustable shelf brackets.

Our catalogue, illustrating and describing the various styles and sizes of Knock-Down Show Cases manufactured by us, mailed postpaid. Orders received direct or through export houses. When ordering through the latter, to prevent errors, please mail us duplicate of order.

GRAND RAPIDS FIXTURES CO.
GRAND RAPIDS, MICHIGAN, U. S. A.



8-Foot No. 31 Show Case.

Showing end view of an 8-ft. No. 31 Show Case set up for use and an end view of the same case, knocked down and boxed for shipment. Weight, 384 lbs., gross; 248 lbs., net; cubic measurement, 28 cubic feet. Securing lowest possible freight rates.

"A TWENTIETH-CENTURY MARVEL IN WASHING MACHINES."

THE Guarantee FOUR-STROKE ROTARY Washing Machine

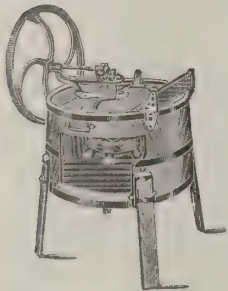
Just placed upon the foreign and home markets, combines the Latest Improvements in High-Speed, Ball-Bearing Washing Machines and will accomplish all that is claimed for or required of any washing machine, and more.

NOT A SPECULATION, BUT AN INVESTMENT, the returns of which will pay you ONE HUNDRED (100) PER CENT.

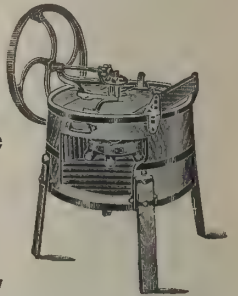
FOR TWENTY DOLLARS in U. S. Gold, or its equivalent, we will crate, ready for steamer and deliver f. o. b. cars at New York City, **Four (4) Guarantee Four-Stroke Rotary Washing Machines.** (Retail in the United States of America at ten dollars each.) Weight, three hundred pounds. Order **FOUR NOW.** Later you will order in large quantities.

MICHIGAN WASHING MACHINE CO., Mfrs., Muskegon, Mich., U. S. A.

Also makers of the world-known "Muskegon" and "Michigan" Washing Machines, over 250,000 of which are in use throughout the United States. NOTE. -When ordering through export houses, to prevent mistakes, please mail us a duplicate of your orders.



GUARANTEE WASHER.



GUARANTEE WASHER.

OCEAN WAVE WASHERS

Wash the clothes as easily and cleanly as sea waves wash the beach.

OVER 100,000 NOW IN USE.

Shipping weight, 85 lbs.

Size, 2 x 2 x 3—12 cubic feet.

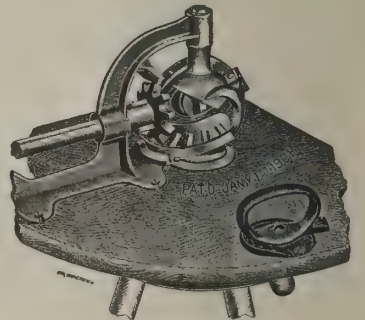
SPECIAL FEATURES.

Our Gearing: Simple in construction; impossible to throw out of gear; the longer it is used the easier it will run. Our Fly Wheel has no threads to strip; no nuts to lose, being attached or detached in a moment's time. Our Improved Dasher is hand-turned; clothes do not cling to it and tear. We assure free action of dasher by using heavy galvanized flanged ring in dasher block, thereby relieving all friction. In general construction of tub and finish, only best materials are used. We ship through any responsible New York exporter. All orders must be sent to us direct.

VOSS BROS. MFG. CO.,
DAVENPORT, IOWA, U. S. A.



ONCE SOLD, THEY NEVER COME BACK.



THERE IS NO FRICTION.
NO LOST MOTION.

THE GENUINE

"O-K" WASHER.

KNOWN AND IN USE THROUGHOUT THE CIVILIZED WORLD.

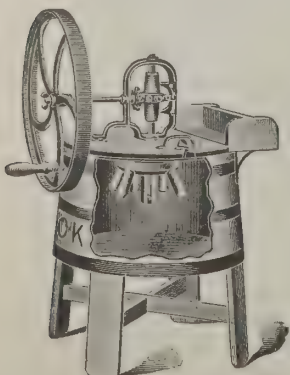
The O. K. is the KING of ROTARY WASHING MACHINES! Because:

1. The O. K. is the only Rotary Washer that has Revolving Steel Ball Gearing, reducing the friction and thus making the machine so light running and almost noiseless.
2. The tub is made of Louisiana Red Cypress lumber, and corrugated similar to a washboard. The legs are made removable, and are packed inside of the tub, as are all of the castings.
3. The wheel turns right or left, pin-wheel or dasher reverses automatically, turning the clothes back and forth through the hot soap-suds, and cleaning them without rubbing them to pieces.
4. The O. K. Washer is made by experienced mechanics, and will outlast any other washer on the market.
5. The tub has a wringer box, fastened with steel brackets.
6. The lid on tub closes tight, no escape of steam.
7. Has glided hoops, castings and name.

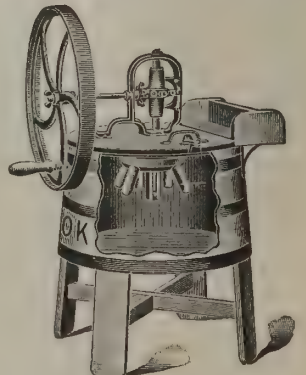
Prices quoted F. O. B. New York. Each O. K. Washing Machine, crated, ready for transportation abroad, weighs about ninety (90) pounds, and occupies nine (9) cubic feet.

Manufactured Exclusively by

H. F. BRAMMER MFG. CO.,
DAVENPORT, IOWA, U. S. A.



O. K. WASHER.



O. K. WASHER.

THOMAS K. OBER & CO. (INC.)

832 DREXEL
BUILDING,

Sole Export Agents of the Kitson Hydro-Carbon Heating and Incandescent Lighting Co.

PHILADELPHIA,
PA., U.S.A.

KEROSENE INCANDESCENT OIL LAMPS

give the most economical light in the world. Burn 90 per cent. of air to 10 per cent. of oil. Air costs nothing.

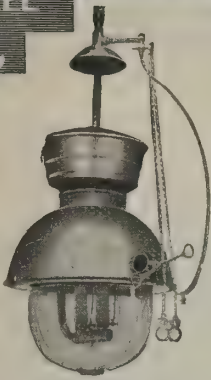
One Gallon of Kerosene Oil Gives a 2,000-Candle-Power Light for Twelve Hours.

PERFECTLY SAFE.

Lamps for Lighting Streets, Stores, Parks, Wharves, Mines, Plantations and Private Houses.

See June number of this Journal for illustrations of various styles. Illustrated catalogues free on application.

No. 190x.
Outside Lamp;
outfit with
tank;
2,000 candle-
power;
30 inches.



No. 501.

Bracket Lamp; outfit with tank; 1,000 candle-power; 15 inches.

BALKE MANUFACTURING CO.,

Patentees and Manufacturers of

Balke Combination Davenport, Billiard and Pool Tables, and Standard Tables.

INCORPORATED \$100,000.

No home or club is thoroughly equipped unless it contains either a Davenport or Standard Billiard or Pool Table or Combination Billiard and Pool Table. We make both, of the highest grade and of the highest quality.

Note—The prices here quoted, U. S. Gold or its equivalent, are for Foreign Markets Only, and include boxing ready for steamer, delivered f. o. b. cars at New York City.

Style "C," as a Davenport, is made of quartered sawed oak covered with N. Y. leather, and, as shown, is a handsome adjunct to a parlor or clubroom.

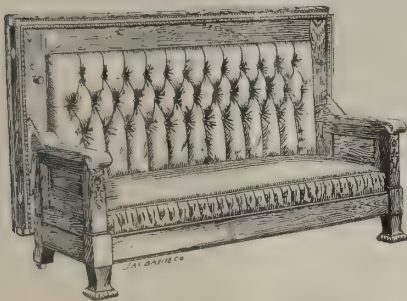
Style "C," converted into a Billiard or Pool Table, has a playing surface of 3½x7 feet; has 6 polished maple cues, and 4 genuine ivory billiard balls for billiard table and 16 best quality composition balls for pool table. Price complete, \$95.00. Gross weight, 800 pounds; net weight, 650 pounds. Size of boxes: 4'x8'x6'; 32"x36"x6'.

Standard Billiard Tables.

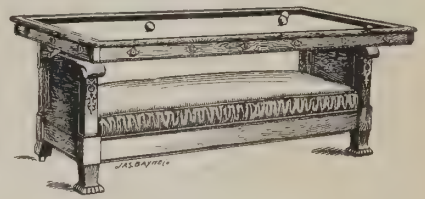
"Benedict" Special is the best table for the price ever offered. The bed is of Vermont slate; imported billiard cloth; cushions are made of the best rubber. Furnished with 12 polished cues and 4 genuine ivory billiard balls. Size of playing surface is 4x8 feet. Price complete, \$125.00. Gross weight, 1,240 pounds; net weight, 920 pounds. Size of boxes: 4'2"x8'2"x8'; 4'x8'2"x2'.

"Den" Special is just the table for the den; made of oak, while the bed is of Vermont slate; furnished with 6 polished cues and 4 genuine ivory billiard balls. Size of playing surface, 3½x7 feet. Price complete, \$90.00. Gross weight, 700 pounds; net weight, 500 pounds. Size of boxes: 4'x8'x8'; 3'6"x6'x2'.

Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us a duplicate of your order.



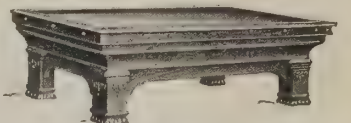
Style "C," as a Davenport.



Style "C," converted into a Billiard Table.



"Benedict" Special Billiard Table.

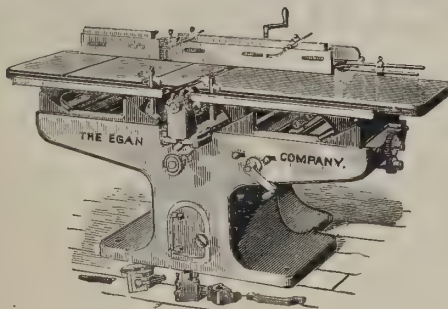


"Den" Special Billiard Table.

NEW WOODWORKING MACHINERY.

We manufacture a complete line of wood-working machinery.

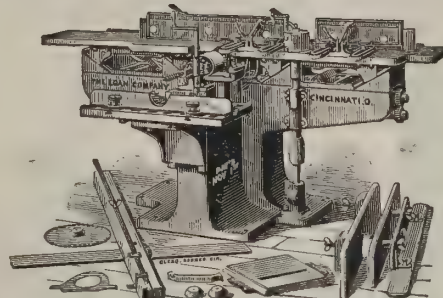
Full details sent on application. We ship machines to all parts of the world.



Plane and side jointer.

Highest honors wherever exhibited: Grand Prix and the Legion of Honor Decorations at Paris, 1900.

This machine is designed for either light or heavy work, and will work wood in nearly all shapes.



Boring and grooving machine.

Send for the circular describing its many and new improvements.

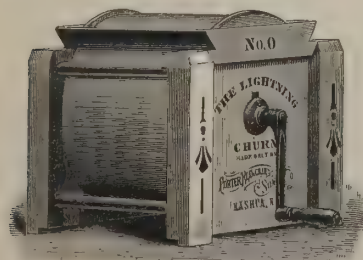
We send catalogue free to interested parties. Correspondence solicited.

No. 2½ NEWLY IMPROVED UNIVERSAL WOODWORKER.

J. A. FAY & EGAN CO., 164-184 W. Front St., Cincinnati, Ohio, U. S. A.

The Lightning Churn.

A delight to dairymen. Just the Churn for EXPORT, combining lightness, durability and economy of space. Thousands in daily use attest its popularity. Packed 2 in a crate.



PRICES FOR EXPORT.

No. 0—\$1.35; capacity, 1½ gals. cream.
No. 1—1.58; " 2½ " "
No. 2—1.80; " 3½ " "
No. 3—2.03; " 4½ " "

Combination sample order, one of each size, \$7.00.

All prices spot cash, f. o. b. N. Y. City.

MANUFACTURERS ALSO OF THE

Cylinder and Blanchard Churns,
Print Butter Molds, Butter Carriers, Etc.

Correspondence solicited.

Orders filled through commission houses.

HALL BROTHERS, WEST ACTON, MASS., U. S. A.



The Screwless Shadeholder as it appears on the lamp.



Established 1857.

The WM. V. GEIS CO.

(INCORPORATED),
Manufacturers of

WIRE GOODS,

Far Rockaway, New York, U. S. A.

"IF IT IS MADE OF WIRE, WE HAVE IT"

The Screwless Shadeholder for electric shades is an article filling a long-felt want of the electrician. We ship them f. o. b. vessels New York City for \$15.00 per thousand. Our full line of samples and further particulars regarding prices, also copy of our latest illustrated catalogue, free on request.

JOHN J. ADAMS,

Manufacturer and Exporter of

CUTTING DIES OF EVERY DESCRIPTION FOR

Leather, Paper, Cloth and Rubber.

Orders filled through commission houses. Correspondence solicited.

83 Mechanic Street, - - - Worcester, Mass., U. S. A.

Rambler

Automobiles of the same price do not develop half the power. Those of equal power cost more than twice as much. Simplicity of construction and an enormous output, every working part being made in our own plant, put the RAMBLER in a class by itself.

Write for complete information and illustrated matter, also "A Little History."



Surrey Type One. 1905 Model. \$1,350. Gross Weight, boxed, 3,300 lbs. Cases measure 236 cubic feet. Immediate Delivery. Other Models, \$750, \$850, \$2,000 and \$3,000.

THOS. B. JEFFERY & CO., Main Office and Factory: KENOSHA, WIS., U. S. A.

Branches: { BOSTON, 145 Columbus Avenue.
CHICAGO, 304-306 Wabash Avenue.
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Representatives in all leading cities.

Double Engine Traction

In THREE Sizes:

20 H. P.	-	Weight, 9½ Tons
25 H. P.	-	Weight, 10½ Tons
30 H. P.	-	Weight, 11¼ Tons

Boxing for Export will increase weight 20 per cent.

Hauling Capacity, = 15 to 25 Tons,
BESIDES FUEL AND WATER.

These Engines Always Give
Maximum Power.

They use
Wood,
Coal or
Straw
for fuel.



Where the reduced speed of a single engine will stall it, the Double Engine walks right along.

Wheels (22 to 28 inch face) shown are for Threshing and Plowing Traction.

Special Wheels
for Freighting.

Boilers are of ample size. With indifferent fuel under severest stress will blow off.

Engines on "belt-brake" show easily 40 to 60 per cent. increase in power over above rating.

WATEROUS, Brantford, Canada.

Representatives Abroad:

WM. FLEMING,	Sydney, N. S. Wales
NEIL CURRIE,	Santiago, Chili
MOFFAT, HUTCHINS & CO.,	Cape Town, So. Africa



[Founded by Root & Tinker, 1877],

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[Founded by Howard Lockwood & Co., 1877.]

THE JOHN C. COCHRAN COMPANY, - - - Publishers
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Published on the 1st of each month.

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LESSONS OF THE WORLD'S FAIR.

WHILE the St. Louis Exposition has still a month to run, it has already taught certain lessons which are fit subjects for consideration. The artistic success of the undertaking was assured almost from the outset. In the varied beauty of its grounds and buildings, in the magnitude and splendor of its assembled displays, representing the foremost achievements of science, art and industry among the races of men, and in the thoroughness of its arrangements for the safety and comfort of visitors, the St. Louis Fair has had no superior and probably no equal among international exhibitions. It is specially gratifying, therefore, to learn that it is likely to be entirely successful financially, as well as in the artistic sense, and that the large-minded men who devised and executed this colossal project will, as they declare, be able to close their books with a substantial balance to the credit side.

The St. Louis Exposition has been more distinctly a business men's exposition than any of its predecessors. It was organized on business principles and in the main has been conducted in accordance with sound business system. Moreover, this exposition has not only assembled in one of the great commercial centers of America a surpassing display of the products which predominate in the trade exchanges of the world, but has drawn to our shores a vast number of representative business men from other nations who, by personal observation, have, we hope and believe, acquired a better understanding of American resources, American processes and American business methods. The presence in the United States of this large number of gentlemen representing the agencies so indispensable to our vast interchange of commodities with other nations has been one of the most gratifying incidents of the exposition year. No guests have been more cordially welcomed. To none has American hospitality been extended with heartier good will. They are our brethren and competitors in the honorable rivalries of trade. We have learned from them and they from us, and we profoundly believe that their influence, broadened and strengthened by their observations in the United States, will be a powerful and lasting force for the steady increase of commercial intercourse between their respective countries and our own.

We conclude, therefore, that one of the foremost lessons of the St. Louis Exposition is that it is first of all a triumph of business enterprise and achievement, and that its most valuable influence will be exerted along the lines of commercial progress throughout the world. The spirit of the business age is predominant. It is an expression of our own times, our own ideals, methods, processes and performances, and its crowning glory will lie in the fact that it has presented to the world more comprehensively than any of its predecessors the triumphs of ingenuity, skill, energy and enterprise in

those fields of endeavor which contribute most largely to the daily comfort, ease and progress of mankind.

In recognition of the fact that the St. Louis Exposition has profited so enormously from the predominance of the business interest and influence, it is already seriously proposed that when another great international fair is held in the United States it shall be instituted and controlled absolutely by the National Government. For the United States this idea is entirely new, but it is worth earnest consideration, and the mere fact that it has been approved in high circles is both significant and flattering to the business world.

THE AMERICAN ELECTIONS.

BEFORE the next number of THE AMERICAN EXPORTER makes its appearance, the American people will have elected a President and determined the party complexion of the National Government for the ensuing four years. The campaign leading up to this election has been singularly listless and devoid of excitement, but uniformly dignified, good-natured and worthy of a patriotic nation. It would be a great error, however, to attribute the serenity with which the great mass of intelligent voters have observed the progress of this remarkable campaign to anything like real indifference on their part. It is due, rather, to a widespread conviction that the final result, no matter what it may be, will have no harmful effect whatever upon the legitimate business interests of the country. The two leading candidates are both of them high-minded, patriotic gentlemen of almost ideal character, commanding abilities and large experience in the public service. To be defeated by a man of that type will carry no sting to his fallen rival. It will not cause even a ripple upon the surface of the orderly administration of law and justice, nor cast a shadow of reproach upon the independent judgment and good faith of the American electorate.

The truth is that the American business man, in full confidence that the final outcome, whatever it is, will have no damaging effect upon his investment and enterprise, has been too busy to take any active part in this year's campaign. And, what is more significant, he is getting busier every day. All signs point to a pronounced revival of activity in American manufacturing enterprise of nearly every description. In many branches, indeed, notably in the iron and steel industries, the upward movement has already begun. The demand is increasing, the number of plants in operation is growing almost every week, and the tendency of prices is upward. Agricultural conditions are thoroughly sound. Cotton, wheat, corn, and the other farm staples have yielded satisfactory crops, the railways are somewhat congested, even though the great crop movement to the seaboard has not yet fairly begun, and there is nowhere in the sky a speck of cloud to cast a shadow upon the prospect for an active and prosperous year. In these conditions, we believe, will be found the real explanation of the apparent indifference of the American people to the result of the great electoral contest to be settled on the 8th of November.

EUROPEAN buyers of American-made automobiles will be interested to know that in style, construction and price those vehicles for 1905 will not differ materially from those of the present year. This much was virtually settled at the recent meeting of the Association of Licensed Automobile Manufacturers in Buffalo, N. Y., at which twenty-four of the thirty affiliated manufacturing concerns in the United States were represented. It was shown at that meeting that the combined output of American automobile manufacturers for 1904 would number approximately 18,000 vehicles, and orders already booked and in sight indicate that the product for 1905 will number at least 30,000. The models for next year are already in hand, and in three-fourths of the factories the examples for 1905 will be ready for inspection early in January. All signs indicate an active and prosperous year in this branch of American industry, and in every department of it there is an eager desire to meet the requirements of foreign purchasers.

AMERICAN INFLUENCE IN FINANCE.

A LONG with the expansion of American trade and American territory during the last half dozen years there has been an increase of American influence in world-finance which is at once powerful and wholesome. Wherever American authority has been established in territory beyond the continental boundaries of the United States it has been followed by earnest and, on the whole, successful efforts to improve monetary standards and conditions. During the temporary occupation of Cuba by the United States the basis was laid for a monetary system founded on the gold standard which was eagerly adopted by the incoming Republic of Cuba. In Porto Rico, also, the gold standard is firmly established. It is in the Philippines, however, that we shall find the largest results of American financial influence. Before those islands passed under American control the Mexican silver dollar was the standard monetary unit, and owing to constant fluctuations in its value in the markets of the Orient credits were uncertain, prices were subject to swift and demoralizing variations, and trade was steadily growing from bad to worse. One of the most urgent duties of the United States Government when it took possession of the islands was to reorganize their fiscal system. It was a task of extraordinary difficulty. Business transactions up to that time had been conducted on a silver basis. To transfer the whole fiscal system of the archipelago to a gold basis without disturbing the usual current of trade, without working injury to vested interests and without impairing the validity of existing contracts was an undertaking which seemed almost impossible. Yet that undertaking has been successfully executed, and with so little inconvenience to private and public interests, that the performance must be recognized as one of the most creditable achievements of the whole American venture in the Philippines. An entirely new and distinctive system of silver coins, produced at American mints, has been provided for the islands, the unit being the peso, which has a definite value of 50 cents in gold. It has taken the place of the Mexican dollar as the monetary standard, one result being that about 45,000,000 Mexican dollars have been driven from circulation in the islands.

The effect of the establishment of the gold standard in the Philippine Archipelago is bound to be felt elsewhere in the Orient. As a matter of fact, the importance of the transaction is already keenly appreciated in China, where there is a manifest tendency toward gold. The Chinese Government has within the last year sought the counsel of an eminent American economist with reference to a transfer of the fiscal policy of the empire from a silver to a gold basis, and the opinion of that gentleman is that while the difficulties in the way are tremendous, the change will ultimately be effected. In Mexico also there is a pronounced movement in favor of the gold standard, an indication of which, perhaps, may be found in the fact that \$40,000,000 of Mexican national bonds recently sold to a banking firm in the city of New York, are specifically made payable in gold coin of the United States, this being the first time that Mexico has ever entered into an international financial arrangement based on such conditions.

We believe that it will be granted, after an impartial survey of the field, that wherever American financial influence is felt in other countries it is an honest and a wholesome influence. Its highest purpose is to safeguard the mutual interests of debtor and creditor, to simplify the complex mechanism of trade exchanges, to promote the growth of the world's commerce, and thus to add to the common welfare of mankind.

A MERICAN exporters of lumber, and particularly those whose specialty is yellow pine, nearly all look for a lively trade during the coming year. The feeling of buoyancy is manifest in every branch of the industry.

A MERICAN apples for export are now ready. The crop is abundant, the quality of the fruit is exceptionally high and the methods of packing show decided improvement.

PERIL TO A GREAT INDUSTRY.

IT is a disquieting fact that one of America's great manufacturing interests, the rubber industry, is threatened with grave embarrassment, if not with absolute starvation, by the exhaustion of its resources of raw material. The strange indifference with which the exhaustion of the rubber supply has been regarded in the trade has finally given way to a feeling of real concern, and manufacturers as well as the United States Government itself are eagerly seeking new sources of this important staple. The efforts of the Government seek to discover regions whose soil and climate will permit of scientific rubber culture, experts holding that it is only through such means that the industry can be saved from destruction. They point out that the increasing demand means the absolute exhaustion of all present known sources of supply, and that at the present rate the output will fall 40 per cent. below actual needs within two years.

The magnitude of the rubber business in the United States is so vast that the death of the industry from any cause would be a national business calamity. Its extent in one line is illustrated by the fact that a single corporation sold more than \$33,000,000 worth of rubber boots and shoes last year, in making which it used upwards of \$10,000,000 worth of crude rubber. The concern mentioned is but one of a dozen or more large buyers who are always in the market for raw material. Reports agree, however, that, while the demand is constantly growing, the output of crude rubber has reached the maximum, and is probably on the decline. The rubber gatherers have to go farther and farther into the jungle every year to find productive trees. Every year thousands of trees are denuded and destroyed by ignorant or greedy tapping. No concerted effort appears to be made except in a few instances to foster the trees on the orchard principle. Yet scientists agree that it is only by some such method that the needed supply of raw rubber can be insured for future use.

It is fortunate, therefore, that practical steps have at last been taken to protect the sources of this important commercial staple. Upon the success of these efforts depends the future of one of America's largest and most important manufacturing industries.

COUNTING THE COST OF WAR.

THE final session of the International Peace Congress at Boston, Mass., U. S. A., on October 8, 1904, was exceptionally interesting because of the presentation of a report by a special committee appointed at the Glasgow congress of 1901 to consider the economic causes of war. This report, representing a painstaking study of the whole question, extending over long periods and many countries, declared in effect that the fundamental causes of war are economic antagonisms, rather than race antipathies, clashing political systems or the mere greed for territory for its own sake. It was therefore suggested that an international study be made of all trades-union and trust movements, as well as of the general tendency of relations between labor and capital engaged in productive enterprise. This suggestion was adopted, together with a resolution urging the United States Government to compile and publish all available statistics bearing on the direct and indirect cost of wars, foreign and domestic, since 1800.

Without necessarily assenting to the proposition that wars have their origin in economic antagonisms, we are bound to say that the publication of war statistics, as proposed, would be an excellent thing. War is the cruellest and costliest of human follies, yet people rarely think about it until it is upon them. However, there are signs of an awakening. The military burdens of the great nations are increasing with such frightful rapidity that the aggregate, all representing the earnings of the producing classes, amounts almost to an impeachment of the reason, justice and moral rectitude of mankind. To place before every wage earner and every business man in Christendom an official statement of the cost, in life, money and productive energy of the wars of a century, might provoke a universal protest against any further increase in the armies and navies of the world. It would appear to be worth trying, anyhow.

OUR IMPROVING CONSULAR SERVICE.

THERE are evidences of improvement in the already excellent consular service of the United States which THE AMERICAN EXPORTER contemplates with unmeasured gratification. The efficiency of that service is so vital to the stability and growth of our trade interests abroad that the Government spares no expense to increase its usefulness. The functions of our consuls are more clearly defined than they formerly were; their tenure of office is more secure; their emoluments and privileges have been increased—and because of these changes the service is gradually developing into the great international business agency and bureau of information which it was meant to be. A foreign recognition of this improvement which is worthy of notice appears in an article in the *London Chamber of Commerce Journal*, which, somewhat reluctantly but none the less frankly, acknowledges that the consular service of the United States is superior to that of Great Britain. The American consul, the article continues, does far more to promote the trade of the United States than the British consul does to promote that of Great Britain, the American being encouraged in the initiative, a tendency which is studiously suppressed in the Britisher.

What our London contemporary has said on this question is extremely pleasing. Undoubtedly the United States Government has tried and is trying by every means in its power to develop a consular system which shall be capable of the largest possible usefulness alike to the American producer and the foreign buyer of his goods. To that end it is required that our consuls shall be men of unquestionable integrity, broad intelligence and large experience in practical business affairs. The consular service can no longer be treated as a sort of snug harbor for men who have failed or become superannuated in other vocations at home. On the contrary, it needs successful men who are yet in their prime, who have more than a mere pecuniary interest in their mission and who are eager to serve to the utmost of their ability the commercial interests of their country in the large and honorable field to which they are assigned. Happily, there is reason to believe that men of this class are entering more and more largely into our consular service. There is room for them, but none for incompetents. The whole service is gradually being transferred to a merit basis, under which the fit and capable will enjoy steady advancement, while the corrupt and incapable will surely be eliminated.

But after all is said and done, the most trustworthy judge of the efficiency of our consuls is the foreign buyer of American goods who seeks his assistance in reaching the producer in the United States. The United States consul who ignores or inadequately responds to a request for information of the nature mentioned, or who is only half-hearted in his efforts to place foreign purchasers in communication with American manufacturers of any indicated class, fails in the most important duty of his office and is utterly unfit for the service. Foreign dealers in American products should keep constantly in mind that the United States consuls in their respective districts are there to be useful to them, not as a favor but as a duty. The consul who, because of any mistaken idea of his office, fails once in that respect, thereby gravely impairs his capacity for usefulness.

AN UNJUST INTERFERENCE.

THE seizure of the British ship *Colchas* by the Russians off the coast of Japan in July of the present year has developed a question of real concern to other nations. Included in the cargo of the *Colchas* were large amounts of naval matter, much of it in sealed pouches. All this matter was opened and examined by the Russian authorities on the ground that it contained information of value to Japan. Part of the mail was subsequently forwarded to the addressees, but a great deal of it was destroyed. This proceeding, we repeat, is a matter of grave importance to the commercial world. The inviolability of mails in transit in time of war is affirmed both by international law and the international postal treaty. It is held that while mails found on ships which have been lawfully seized

or captured may be examined under certain conditions, the confiscation of such mail is justified only when it is clearly shown to be of military value to an enemy. The international rule guaranteeing the safe transmission of private correspondence in time of war necessarily implies the inviolability of mails on neutral ships passing to and from the ports of a belligerent country. That was the status of the United States mails on the *Colchas*.

Apart, however, from its repudiation of a principle which modern nations have formally recognized as binding, the action of the Russians in the case of the *Colchas* has brought about another result, which is no less displeasing. Because of the seizure of the vessel named, the owners of the line to which she belongs have notified the United States Government that they will carry no more American mails to Japan during the continuance of the present war. The situation, therefore, is just this: Through no fault of its own, but solely because of the arbitrary act of another government, the United States is to be indefinitely deprived of a neutral line of communication with a nation with which it is at peace, and which it has employed solely in the ordinary transactions of trade and commerce. Such an interruption of the legitimate trade of friendly nations by the act of a single belligerent is contrary not only to international law and usage, but to the spirit of the times. It is fraught with such evil consequences to the inoffensive commerce of the world that we have no doubt Russia will be persuaded to recede from her position—a position which is at once untenable and perilous.

AMERICAN VEHICLES ABROAD.

SIR ALFRED HARMSWORTH, of London, remarked during his recent sojourn in the United States that, after seeing what had been done to perfect and popularize the automobile in America, he was surprised that any foreign-made vehicle of that type should be imported into the United States. This recalls the fact that at the recent annual meeting of a British association of carriage manufacturers the chairman of the organization frankly declared that the English export trade in carriages had almost wholly disappeared. The American, the speaker went on to say, has taken the British colonial market for his own, and the proof of his having been there was to be found in the mark his touch had left upon the style, shape and construction of colonial carriages.

The gentlemen quoted above clearly perceive one of the most powerful tendencies in the American vehicle industry. The Australians frankly avow their preference for American-built carriages and wagons, and for the simple reason that those vehicles are better adapted for use in their countries than any made elsewhere. The development of American vehicles for road use has been distinctly logical. The roads of the United States until a few years ago were distinctly bad, and are none too good, even now. The American maker, therefore, was required to produce wagons and carriages which, first of all, had to be able to endure a vast amount of wear and tear. Having done that, his next task was to combine lightness with strength, eliminating all needless weight but without sacrificing the smallest degree of durability. In the vehicles thus evolved, adapted as far as possible to the poor roads of the United States, the keen-eyed British colonist found precisely what he needed for service in regions where physical conditions were relatively the same. There is the secret of the steady demand for American vehicles in the British colonies. It is expressed in two words: Merit, Adaptability.

Sir Alfred Harmsworth's remark as to the development of the automobile in the United States was amply warranted by the facts. The manufacture of motor vehicles in America is still in its infancy, but its growth is rapid and increasing, and it has already entered the export field. That American-made automobiles are destined to share in foreign countries the high repute so fairly earned by American carriages and wagons seems to admit of no doubt whatever.

ITALY, we understand, has planned to forestall any invasion of that country by installing a large iron plant with American equipment. Our Italian friends are wise.

FIRST AID SERVICE ON RAILWAYS.

WITH a view to providing prompt "first aid to the injured" among passengers using its lines, one of the foremost railway companies in the United States of America has instituted a system which seems likely to prove highly useful. In pursuance of this plan, all baggage cars, express cars, construction cars and wrecking cars belonging to the company, together with its car-yards, shops, offices and stations, are to be equipped with stretchers and "first aid" boxes, and these appliances are to be placed under the control of employees who have been thoroughly trained in the "first aid" service. This instruction will be given by the regular surgeons of the company to all men employed on passenger and freight trains, and will cover the primary treatment required for wounds, fractures, burns, scalding, shock and prostration by heat. Each car included in the system will be provided with a sealed box containing six "first aid" packages, and it is intended to train employees in their use so thoroughly that in case of accident the contents of the packages can be applied as intelligently and promptly as by the average surgeon or nurse.

This adaptation of the "first aid" system to the railway service in the United States is a new departure, and will undoubtedly prove a beneficent one. The same system has already been established in many large manufacturing plants in America, where it is conducted by employees regularly instructed in its application. Its gradual extension to establishments engaging large numbers of operatives affords striking testimony to the increasing regard of employers for the welfare of their employees, and it also illustrates the increasing humane tendency of our modern industrial life.

THE HAGUE CONGRESS CALLED.

IN conformity with his voluntary promise to the members of the Interparliamentary Union who recently visited him in Washington, the President of the United States on October 25th issued a note to each of the powers which signed the original Treaty of The Hague, inviting them to name representatives to meet in another conference for the purpose of broadening and strengthening the original agreement, and especially to consider means to further ameliorate the horrors of modern warfare and to conserve and extend the rights of neutral commerce on the high seas. It is a particularly gratifying circumstance that this invitation is extended not only to the nations which participated in the first conference at The Hague, but also to four of the Republics of Central and South America which have signified a desire to adhere to The Hague Treaty, but which have thus far been prevented from doing so by the singular omission from that treaty of a general clause, usually contained in such compacts, allowing other nations to adhere thereto on their own application.

It is specially appropriate that this call for a second conference at The Hague should be issued by the United States of America. The United States Government is pledged by tradition, pledge, precedent and unbroken usage to support to the utmost of its ability every movement to advance the interests of international peace and dispense as far as possible with the harsh processes of war in the adjustment of controversies among nations. Every measure to effect that humane purpose has uniformly received and will continue to receive the active sympathy and support of the Government at Washington. The good faith of the United States in the integrity of the International Court of Arbitration created by the first conference at The Hague, is shown by the fact that the United States was a party to each of the international controversies since submitted to that tribunal, and in each instance represented that that body was precisely the one best qualified to adjust the matters in dispute.

That the United States should take the initiative toward a second conference at The Hague is gratifying for another and scarcely less important reason. The war in the Far East has disclosed grave differences of opinion between Russia and various other nations, including the United States, regarding the rights of neutral commerce, and also as to what legitimately constitutes contraband of war. Because of Russia's insistence upon conditions which the United States and other powers do not concede, neutral commerce passing to the

ports of Japan has been seriously interrupted and endangered. This interference is so serious, indeed, that neutral ships bearing neutral cargoes intended for inoffensive industries in Japan are in peril of seizure on Russia's own definition of their rights and privileges. In a word, Russia dissents from the views of nearly all other nations as to the rights of neutral commerce, and as a nation at-war is a law unto itself, there is nothing to do but to appeal to her on the broad grounds of reason and international amity. The war was clearly shown the need of a broad-gauge revision of all international agreements relating to neutral commerce and contraband of war. What is needed is an arrangement, accepted in good faith by all maritime nations, whereby neutral ships bearing neutral cargoes not intended for the military use of an enemy shall have safe access to the ports of a belligerent country. That war between two nations should be permitted to suppress peaceful commerce between either of them and other countries is monstrous, yet that condition has virtually arisen from the present conflict in the Far East.

To correct this gross injustice and bring all the great powers into a common agreement that neutral commerce shall be free from interference in time of war is one of the honorable tasks awaiting the second conference at The Hague. If that result shall be accomplished, as it should be, as it can be and as we fondly hope it may be, the proceeding will be recognized throughout the world as a distinct triumph of wise statesmanship in behalf of commerce, humanity and civilization.

THE meeting in New York on October 24th of the British Iron and Steel Institute was an international event which happily illustrated the steady growth of fraternal relations between the two great branches of the English-speaking race. The presence of the members of the British Institute in the United States was heartily welcome. Its members, representing the dominant forces in Europe of the greatest of modern industries, found that in all its branches the manufacture of iron and steel in America had made enormous strides since their first meeting in the United States in 1890. They found that in productive capacity the United States had taken first place among the nations; that in magnitude, method and thoroughness of equipment the steel plants of America surpass all others in the world, and that the control of the steel industry and its related interests has been permanently transferred to the western hemisphere. The business community of the United States delighted to honor the distinguished men composing the British Institute. They deserved all that could be offered in the way of American hospitality, and their visit, helpful as it will doubtless be to themselves and their entertainers, will be notable among the events of a year which has been made memorable in the United States by the conventions of many distinguished international associations.

THAT familiarity breeds contempt is a true adage few will be disposed to dispute, and perhaps it has no better illustration than in the matter-of-course way in which Americans use our everyday business home and social life appliances and devices undreamed of a few years ago. The telephone is a notable example. It is only a generation ago, in 1876, that the telephone was exhibited at the American Centennial Exposition in Philadelphia as a sort of scientific curiosity. Since then it has grown into a great and valuable public utility without whose aid it would seem to be impossible to carry on our daily life. It is, perhaps, even a greater help in its adaptability to the requirements of modern life than the telegraph, and that its control and management form an industry of no small importance is shown by the following brief statistics. Without taking into account private telephone lines, some \$274,000,000 is invested in concerns which supply this service to the public in this country; \$75,000,000 in bonds have been created by these corporations and about 65,000 people are employed by them. There are almost 2,500,000 telephones in use in the United States, and in 1903 more than 5,000,000,000 messages were transmitted.

LARGE orders for tin plate have been placed with American manufacturers by the Japanese Government. It is stated that this material will be used in making various utensils for the Japanese troops in the field.

NEW YORK'S GREAT SUBWAY.

WITH the formal opening of traffic in the New York Subway on October 27th the touch of completion was given to a project which, while realizing a half-century dream of the American metropolis, also takes a place among the most splendid engineering triumphs of modern times. In its magnitude, the public utility and the methods employed in its excavation it is a matter of international scientific interest, and for that reason THE AMERICAN EXPORTER feels called upon to place before its readers some account of this remarkable undertaking.

The physical environment of New York is unlike that of any other great city in the world. Built on a long, narrow island of rock, surrounded by waters particularly difficult of navigation, its increasing population long ago necessarily began to overflow into the vacant spaces to the east, west and north. This movement, compelling hundreds of thousands of persons to establish houses at points ranging all the way from two miles to twenty miles distant from their places of business in the city, has for years distinguished the question of local transportation as perhaps the most important of all municipal problems. The demand for safe, cheap, speedy and uninterrupted transit among all points in the city and its immediate outskirts was fairly met for a time by the efficient operation of extensive systems of passenger railway on the surface and above the surface of the streets. But the city soon outgrew those facilities, and far-sighted citizens realized years ago that the only practical solution of the problem lay in the construction of a vast system of underground road. The undertaking was so colossal, however, and involved such an enormous outlay of capital and so many difficult tasks in engineering that private capital shrank from it. A long period of inaction followed, and it was only after the city, under special authority, awarded a contract for the construction of the work for \$35,000,000 that the project took form. Under the terms of that agreement the contractor acquired the right to operate the system for fifty years, on condition that at the end of that period the subway should become the property of the city without cost, the equipment also to pass on a fair appraisal of its value.

Under the terms of the contract work on the subway began March 24, 1900, and has continued night and day ever since, save for occasional interruptions by labor troubles and other difficulties. Yet so systematically has this tremendous work been carried on that except in a few instances where construction was peculiarly difficult, the vast street surface traffic has gone ahead as usual and business operations have suffered but little interference. Even in Broadway, the great business artery of the city, under which the subway extends for miles, and where the work of excavation was of the most difficult character, the pedestrian, unless he knew it, would never have dreamed that away below the surface, far lower than the foundations of many of the lofty "sky-scraper" buildings an army of men were laboriously blasting through almost flint-like rock a tunnel capable of affording passage for modern railway trains.

While statistics are usually tedious, they have a descriptive power as applied to this enterprise which, in part at least, will excuse their use: The lines of the subway now in use comprise about thirteen miles of double track, extending north and south, for which there are thirty-one stations. An average of 10,000 men were at work on this system for more than four years. It was necessary to excavate about 3,212,000 cubic yards of material, of which 1,900,000 cubic yards was earth, and 1,312,000 cubic yards of rock had to be blasted in open cut and in the tunnels. The rock thus removed would make a structure 500 miles long, with the height and thickness of the Great Wall of China. The timber used in "false work" would supply the lumber for 10,000 frame houses of two stories each. In construction work 65,000 tons of steel were used and 8,000 tons of cast iron. There was laid 551,000 yards of concrete and 910,000 yards of waterproofing. The total length of track laid is 305,000 feet, of which 245,000 feet is underground and 60,000 feet is on elevated structures. At some points the tracks are 20 feet above the surface, at others 200 feet below.

Briefly described, the subway was built thus: The top, sides and bottom were constructed of concrete and waterproofing in alternate layers, encasing a framework of steel beams. The roof is supported by steel pillars not more than five feet apart and set in parallel rows in the concrete of the top and bottom. The subway is therefore a long, rectangular hole, thoroughly waterproofed. Its shallowness makes it possible to do away with artificial ventilation. Enough air enters at the stations to keep the tunnel fresh and sweet, and the rush of cars is counted upon to keep the air in motion. When the tunnel was driven upward close to the surface all water-pipes, gas-pipes and sewers met had to be removed and replaced or diverted. As the pipes were encountered, they were hung up by chains to the timbers supporting the street. Engineers declared that it would be impossible to blast out rock from beneath these pipes without smashing them; and they came from far and near to see the thing done. It was done. The dynamite explosions expended their force, and all danger from flying pieces of rock was prevented by the use of great thick mats woven from rope, which were laid over the sections of rock to be blasted. As the pipes, however, could not be left in their former criss-crossed maze, forty-five miles of new pipes were laid down. As an indirect result of the building of the subway, the city's underground pipes along its course have emerged from chaos into order.

Dozens of miles of sewers had to be rebuilt. In one aspect the driving of a trench through New York's streets was a bit of exploration disclosing unexpected conditions. The city's sewers were found to be in a decidedly un-

economic tangle. Some were too large for their purposes, some too small. One sewer would be found to run above another instead of into it. In one place the water-pipes, thickly incrusting with filth, were found running straight through a sewer. The engineers of one era of the city's development had built the sewers that contemporary conditions called for; their successors had added others quite unrelated to the earlier ones. Because of labor troubles the contractors built many of the new sewers of concrete, which are so thorough in workmanship and durability that they have set a new standard of excellence in municipal work of that character.

The stations of the subway are models of cleanliness, comfort, convenience and artistic taste. Each station has a distinguishing color scheme, so that a passenger can tell at a glance from his car whether he has reached his station, even if he cannot see a sign. New York streets have always proved a bane to strangers—for they are hard to identify, and they frequently lack signs. The subway stations remove this difficulty; each tells, by numbers, letters and symbols in every corner and in every detail what station it is. And the decorations which give this explanation are at many stations beautiful, and at all stations pleasing. Rookwood pottery, faience and marble are used in many tints and in countless designs. Never before has tiling been used on so vast a scale. Indeed, the general effect of a ride through the tunnel will be that of buzzing through a broad, airy passage, and flashing now and then into commodious, well-lighted rooms, offering a kaleidoscopic variety of color. Glass roofs provide the stations with plenty of light—which is diffused from the glazed tiles—and the platforms are broad enough to accommodate great crowds. Inconspicuous hooded entrances and exits—little kiosks of sheet-iron and glass—rising from the sidewalk, show where the subway stations are. And these are not placed on the main avenues, where the subway runs, but a few feet from the corner, down the side streets.

The motive power used in the subway is electricity, applied to the third-rail system. The principal power-house is 700 feet long, 200 feet wide and 125 feet high. The weight of the steel framework alone is about 12,000 tons. The total generating capacity of the plant is about 130,000 horse-power. The coal bunkers have a capacity of 18,000 tons. Nine engines, together with the turbo-generating plant, give from 80,000 to 100,000 horse-power. The engines are of the twin compound type and require six boilers for each engine.

The cars for the subway, 500 of which have already been tested, are built of steel and are each 52 feet in length, with a capacity for seating fifty-four people and carrying 100. All the cars are sheathed in copper and are very strongly built. The roof of the car slopes toward the top so as to conform to the arch of the subway. The constructive features of both the parlor and ordinary cars are similar, but in the details of lighting and finish they differ. All non-metallic substances used in building the cars have been chemically treated, so as to render them non-combustible; they are also impervious to moisture and do not warp or crack. The electric wiring is protected against fire with the latest devices. The center sills of the cars are of compound construction with cross-trussings between the steel needle-beams and the platforms. The sills are of steel with heavy anti-telescoping plates. The platform posts, which extend upward to the roof, are made of heavy steel bar at the corners and center of platforms. They are bolted to the steel sills, to the steel floor plate and also to the hooded roofs, forming a heavy steel angle in one piece reaching from plate to plate, and extending back into the car body 6 feet on either side. The floors of the cars are double, with asbestos fire-felt between, and the floor on the other side covered with three-sixteenth-inch asbestos "transite board." The cars have half-Empire roofs with light-colored ceilings. The ventilating sashes are opened by a lever, those on each side being divided into two sets, the first set admitting fresh air, and those in the rear of the car allowing the foul air to escape. All the cars have the automatic drawbar coupling and automatic air-brakes. The cars are vestibuled, and when made up into trains each car can be closed, so as to be entirely distinct from the other.

In operating the road express will consist of eight cars and local lines of four cars. During the "rush hours" of the morning and evening express trains will run on a two-minute headway and local on a one-minute headway. The maximum carrying capacity of the system is 100,000 passengers every hour, day and night.

Runners for Wheeled Vehicles.

AN ingenious contrivance invented by a manufacturer in the State of Ohio, U. S. A., is in the form of a runner for wheeled vehicles, designed as an apparatus of direct attachment to the wheels, whereby it may be used when snow is upon the ground. The utility of such a device is quite obvious. The runners are made from a single piece of steel, extending underneath the full length of both wheels, or a separate runner may be utilized for each individual wheel if desired. The forward end of each runner is upwardly curved similar to the form usually found in sleighs. From the runner extends a movable steel band adapted to partially encircle the rim of each wheel. This band is secured to the tire by means of retaining lugs placed at intervals, and is arranged at one end with an adjusting device which makes it adaptable to any sized wheel. The wheel of the vehicle rests in a concaved notch of the runner, and as the band is adjusted and tightened the wheel is securely locked into position. The salient feature of this invention is the convenience with which a wheeled vehicle may be converted into a sleigh for ready use with snow. When not in use the apparatus may be folded into a compact space.

Automatic Telephone Exchanges.

AFTER years of experiment, the automatic telephone exchange, whereby the subscriber places himself in communication with other subscribers without human assistance at the central exchange, is an accomplished fact and is rapidly entering into commercial use in the United States of America. This new system has proved completely successful, and the business of the largest city can be handled as efficiently and conveniently as that of a town which requires but a hundred telephones. For instance, in the single city of Chicago, Ill., U. S. A., an automatic exchange with 10,000 telephones is already in operation, and others will be added as occasion demands, the ultimate purpose being to handle the business of the entire city.

While the subject is largely a technical one, even the non-technical reader may derive some idea of this new system from the following description: The automatic telephone itself resembles, in many particulars, the manually operated telephones with which we are so familiar. It consists of the usual transmitter, receiver, bells, battery and induction coil, adding only a calling dial, a circular metal piece, on the periphery of which are ten finger-holes, numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 0. A stop is provided at the lower of the holes to limit the distance which the dial may be made to revolve.

The method of calling is extremely simple. To secure a number, say 761, the subscriber first takes the receiver from the hook; then, placing his finger in hole No. 7, pulls the dial around to the stop above mentioned. When released, the dial is instantaneously restored to its normal position. The subscriber is now connected to a trunk line leading to the seventh group of so-called "connector" switches, which we may call the "seven hundredth" group. In the same manner he calls 6 and 1 in this group. Having turned the number desired, he presses a button underneath the dial, which rings the bell of the person wanted, and the connection is completed. In the event that the 'phone of the subscriber called is busy at the time of the call a vibratory sound in the receiver of the caller notifies him that such is the case.

The keyboard of internal mechanism of the telephone occupies a space 5x3x2 inches, and consists of an impulse-sending mechanism, which, in response to the rotations of the dial, communicates to the subscriber's switch a number of impulses corresponding to the number of the hole in which the finger is placed, lifting the shaft which occupies the central position of the switch, up to the proper row of contacts and bringing the "wiping fingers" fastened thereto into connection with the proper contact in that row.

It should be understood that, when the call is made, no impulses are sent over the line on the down movement of the dial, but on the return. This is arranged for the protection of the instrument against careless or hasty subscribers. The return of the dial is regulated by a governor, which always insures proper speed. The calling mechanism may be said to be perfect. It is simple, and works with remarkable accuracy, speed and precision.

Increasing Use of Aluminum.

WHILE the commercial use of aluminum in the United States of America has not grown as rapidly as was expected ten or twelve years ago, present conditions indicate a steadily enlarging market for that wonderfully adaptable metal. It is already used in the manufacture of many attractive articles for household use, including combs, hairpins, trays, etc., as well as kitchen utensils for which it is peculiarly suited because of its cleanliness and durability. But its most valuable use is in electric construction and transmission. Aluminum has 62 per cent. of the electrical conductivity of copper. Hence a wire about one-eighth larger in diameter than a copper wire will conduct equally well, and at the same time will weigh less than half as much. At the present price of the metals aluminum is considerably less costly, and the lighter wires may be supported by poles placed farther apart than is safe in the case of copper. Many power-transmission lines are already using aluminum, and most of those in course of construction are employing it. In the State of Connecticut, for example, 2,000 horse-power of electricity for lighting purposes is transmitted eleven miles over an aluminum line.

Steel-making also absorbs large quantities of aluminum, the metal being used as a deoxidizing agent in the Bessemer and Siemens-Martin processes. At present the annual product in the United States is about 7,150,000 pounds, and increasing rapidly, the selling price of the metal being so low that, bulk for bulk, it is the cheapest metal produced, except iron, steel and zinc. As an example of an industry entirely developed by scientific research aluminum production is of deep interest. The career of the metal as an industrial factor is evidently just begun.

Machine to Pick Cotton.

THE fact that picking cotton is perhaps the largest item of expense in producing that staple has inspired many attempts to invent a machine capable of performing that work, but of all the devices meant for the purpose none has achieved any considerable success. There is a good deal of promise, however, in a machine recently invented by a planter in the State of Georgia, U. S. A., in which a current of air is set up in a tube by means of a suitably arranged fan or blower, the same discharging into a receptacle, the suction thus produced serving to remove from the plants the open bolls of cotton which are ready for picking, and to convey them through a tubular conduit and then through the blower mechanism into the receptacle. This apparatus is mounted on wheels and is designed to be driven down the rows of cotton plants in the field. As the end of the suction tube passes over the open bolls the cotton is separated from the plant.

Enormous Rafts in the Pacific.

TO tow for hundreds of miles at sea colossal rafts of logs containing in some cases 1,000,000 lineal feet of piling was formerly considered a hazardous undertaking, but it is now done with ease in the far Northwestern regions of the United States of America which border on the Pacific Ocean. In the summer season dozens of such rafts are towed from the States of Oregon and Washington to San Francisco and other ports of California, the voyage requiring sometimes as much as three weeks.

One of these rafts contains as many as 20,000 logs or piles, each ranging from 80 to 110 feet in length. The girth of the raft is often 600 feet around the center. All the rafts are built in the form of a mighty cigar, or barrel, tapering gradually each way from the middle. They are constructed in a great "cradle" that is moored in shallow water near shore. This cradle resembles the framework of an immense wooden vessel, having a double keel and built of heavy timbers with strong knee-braces between the floor timbers and the verticals at a point which in a vessel would be called the bilge. The keel is made in two sections, which are held together by massive locks and clamps while the raft is being constructed. The piles forming the raft are very long, and to make a strong, and at the same time flexible, structure out of pieces of such comparative shortness is a work requiring much skill. The piles are placed in one by one with a derrick in such a manner as to "break the joints" as much as possible. And thus the work progresses.

After the raft is thus built in the cradle it is wrapped around with cable of 1½-inch iron chain at intervals of every 12 feet. While this cable-wrapping holds the mighty mass in a firm embrace, it does not deprive it of a certain necessary flexibility. Extending from end to end of the cigar-shaped raft, and right through its center, are two 2-inch chains, one holding the bulkheads at each end in place, and the other being fastened to the hawser. From the towing chain, lateral chains running from the center connect with the encircling bands. So it is possible to apply a steady strain in towing; for, the stronger the pull the tighter the logs are clutched together.

Then the mighty raft and cradle are pulled out into deeper water. The massive locks of the embracing cradle are opened by pulling the ropes connecting the parts; the two sections of the cradle float apart and the giant "baby" is committed to the waters and ready to tow away seaward. The tug or tugs steam away cautiously, moving slowly and keeping a steady, heavy strain on the mass. In the event of head winds and strong seas the tugs merely "hold on," keeping the vast bulk astern steady, until wind and waters abate their strenuousness.

Some of these huge rafts—those first constructed—have gone to pieces out at sea in boisterous weather and the myriads of piles are scattered for hundreds of miles up and down the coast. These piles are a serious menace to all coastwise navigation. The later rafts, however, have been so securely built as to be able to withstand a rough ocean trip.

Worst Enemy of American Cotton.

THAT the future of one of the great staple crops of the United States of America should be seriously imperiled by a tiny insect scarcely larger than the common house-fly seems almost inconceivable, yet it is a fact to which the Government, planters and scientists are giving their earnest attention. According to statistics compiled by the Census Bureau of the United States, this insect, known as the boll-weevil, last year destroyed 739,360 bales of cotton, worth more than \$36,000,000, in the single State of Texas. To this the value of the seed must be added, and the Census Bureau, after exhaustive research, fixes the total loss at \$49,272,989.61. This represents the damage for only one year, it must be remembered, and the weevil has been in Texas more than ten years. The total value of the agricultural products of the United States is, approximately, \$5,000,000,000 each year. The total loss from the operations of destructive insects ranges from \$300,000,000 to \$400,000,000 per year. It may be averaged at \$350,000,000, or 7 per cent. The loss in cotton last year, therefore, was, approximately, one-seventh of the total loss sustained by all the crops of the country, and since the whole value of the cotton crop, roughly speaking, is \$500,000,000 annually, or one-tenth the total value of all agricultural products, it will be seen that the damage to the South's principle staple was proportionately heavier than to the others—a fact that is all the more significant, when it is remembered that the burden fell on the planters of a single State.

The Texas Legislature last winter appropriated \$50,000 to be given as a prize to any one bringing forward a practical and effectual method of getting rid of the troublesome and costly bug. A commission was created and its members made trips through the State to inspect the actual workings of many of the plans submitted. That was months ago and the \$50,000 is still untouched.

The United States Department of Agriculture has spent years and hundreds of thousands of dollars in seeking a means of exterminating this destructive pest, but without success. It is now making extensive experiments with a species of carnivorous ant, which is said to prey upon the weevil.

Enormous Street Railway Traffic.—The magnitude of street railway traffic in American cities is indicated by the fact that last year the surface lines in Philadelphia, Pa., U. S. A., carried nearly 400,000,000 passengers and received \$15,923,507 in fares. In the same city during the year 1,276 miles of new track were laid, 940 miles of which were an entirely new road.

Motor Boats in Coast Fisheries.

ONE of the most notable economic changes following the increasing use of the combustion engine is found in the employment of motor-driven boats in the coast fisheries of the United States of America to the profit of the enterprising fishermen and to the equal advantage of the consumer in the large cities. By means of motor-driven boats the fisherman is able to quickly take his catch to market or to a point at which steamboat or railroad will take it the remainder of the distance, so that his fish are fresh when displayed to the consumer in the city markets and the price received and the amount of fish sold are naturally greater than under the old conditions, when wind and weather governed delivery. It is interesting to look over the craft in any one of the hundreds of places along the coast where fishing is an industry and note the adaptation of the combustion engine, generally of the gasoline type, but sometimes using petroleum. Fine new launches with deck cabins are in sharp contrast to the open dory, seaworthy and rather fast, or to the well-rounded catboat, denuded of mast and sail, that the gasoline or kerosene may be more sure to accomplish the certain arrival at fishing-ground or market. Just as the old-fashioned farmer has adopted the little engine to do his work, so has the old-time fisherman taken advantage of the progress of the motor and makes money out of it. Fishermen in the waters which supply the great city of New York with sea-food now with power craft can get their catch to market in less than half the time it used to take with sailboats. One little group of such fishermen cleaned up \$5,000 above a season's living expenses for themselves and families because they had a 50-foot naphtha launch to make the daily run of a dozen miles to Newport. Under old conditions of delivery by catboat or sloop the profits were but a small part of the present earnings.

In this connection it is well to consider the possibilities of the application of the combustion motor to the deep-sea fishing fleet. Auxiliary fishing vessels are already in use with engines intended for operation only when the wind fails. But the day is coming, many believe, when the sail will be the auxiliary and the motor the main source of motive power for this class of vessels. The present objection is the element of uncertainty that exists with the motor boat, especially in the sparking arrangement, which has a tendency to get out of adjustment unless handled skilfully. The strain is great, as it is in the automobile, and it makes more difference when the breakdown occurs on the water than it does on land. On the other hand, the development of the combustion motor has been exceedingly rapid, and probably the motor of 1904 has developed very few weaknesses, compared with those produced in previous years. Each succeeding year will bring more perfect results, naturally, until the combustion engine will be as perfectly reliable as the engine of steam. If serious attempt is made to earn the \$2,000 prize offered by M. Charley, the French enthusiast, for the first motor boat to cross the Atlantic on its own keel and under its own power, an opportunity will be given to study the question of deep-sea navigation for this class of boats. The principal objection appears to be the fuel-carrying capacity of the boats. Yet, in commercial use, with much heavier vessels than those used for trials of speed, the fuel question may be as satisfactorily solved as in steamships burning oil for fuel.

Evolution of the Typewriter.

TYPEWRITING machines, particularly those of American make, have entered so largely into the office work of the business world that it seems almost incredible that so recently as 1882 only about 1,500 machines of a leading design were placed on the market annually; yet that statement is made by one of the foremost technical journals of the United States. Since then, however, the popularity of the typewriter has become such that at the present time a finished machine is being produced for every five minutes of the working day.

There have been many curious and beautiful machines constructed from time to time to the order of various people, or for presentation. Perhaps the most elaborate typewriter ever produced was that made for the Czarina of Russia. All parts of the machine ordinarily black were enameled blue, and those portions of the framework usually outlined in gold were inlaid with mother-of-pearl. The keys were of African ivory and the bright parts of solid gold. A similar machine was presented on her wedding day to the present Duchess of Wales, then Duchess of York, and another was made not long ago to the order of the Khedive of Egypt. The King of England possesses an exceedingly elaborate typewriter. It is ivory-keyed, gold-plated throughout and very beautifully engraved. An extraordinary machine was that made for Li Hung Chang. It was fitted with twenty sets of characters—1,800 in all—each of which, as no dies were available, had to be turned out by hand.

A somewhat expensive machine was built for the use at Eton School, in England, of the young son of the Countess of Carnarvon. It writes the Greek alphabet, and is used by the boy, whose eyesight is somewhat weak, in preparing his lessons. This is believed to be the only Greek typewriter ever made, but machines for writing Russian are fairly common, a certain well-known American firm having recently supplied a large order for typewriters for government offices in the land of the Czar. Machines have been built to order for writing Arabic, Sanscrit, and even old, black-letter English. Only one of the last-named was ever made, so far as can be ascertained. It cost nearly \$500, and was made for a mysterious individual, who paid cash in advance and declined to furnish either his name or address.

Queer Locomotives for Japan.

A CONSIDERABLE number of locomotives of peculiar design for use in Japan are under construction in the shops of a great manufacturing concern in Philadelphia, Pa., U. S. A., and several of them are ready for shipment. To all appearances the tiny locomotives are peaceful-looking enough. As the one now completed stands in the shops, almost lost to view in the shadow of monsters of American railroads, it suggests an infant in the presence of Titans. It is so small that its weight is given in pounds instead of tons. The little engine scales 2,500 pounds, which is about the weight of an automobile of the "Red Devil" variety. If the engine gets in the sulks and refuses to budge the Japs can easily tow it out of the road. It is a handy little affair, easy-running, easily managed.

There is just about room for one man in the tiny cab. Sitting on the solitary seat he can reach every part of the starting and stopping gear without getting up. If he be dextrous he can fire the engine without rising also, for the firebox is within arm's reach. A canopy, open at the sides, covers both cab and engine, and the side plates almost hide from view the diminutive driving-wheels.

The little engine is intended for use on narrow-gauge railroads, of which there are many in Japan. In any other country the work that the little locomotive is to do would be done by horses, but these useful animals being scarce in the Mikado's realm most of the transportation has been in the hands of the vast army of coolies employed in a carrying capacity by the Japanese. To facilitate the operations of these coolies the Japanese have built hundreds of miles of narrow-gauge railroads, and along these the merchandise and produce of the country have been propelled, not by engines, or even cattle; but by hand power. Coolie labor is cheap in the Orient, but intelligent Japanese who have traveled conceived a better way of transporting merchandise than in pushing it along a railroad by hand.

The tiny railroads being already built it was only necessary to provide locomotives to fit them, and this proposition was made to the Philadelphia company: that they build a locomotive to fit the gauge of the coolie railroads, each locomotive being large enough and strong enough to do the work of two coolies. The little engine now in readiness for work in Japan is the result of the designers' ingenuity. It will probably be found to do the work, not of two coolies, but of half a dozen at least, for it is a powerful little machine.

The baby locomotive will transform the scene on Japanese plantations. The custom has been to load the tiny trucks with tea, rice or whatever products the plantation produces, and then shoulder them along the narrow-gauge rails. When a hill was reached the coolies put forth their utmost efforts, perspiringly pushed the train to the top and then rode while it reached the bottom by the force of gravitation. After that they would leisurely shoulder it along again. It was slow work and trying to the coolies. The Japanese complain that the coolies catch cold and die very easily from getting in a red-hot perspiration while shoving the train to the top and then becoming chilled while the train runs down the other side. All things considered, it is thought that the new engine will prove more economical as well as more useful than the coolie power.

Submarine Boats for Russia.

THERE is excellent authority for stating that at least thirty of the fifty submarine torpedo-boats recently ordered by the Russian Government will be built in the United States of America. In fact, unofficial information has been received in the city of Washington, to the effect that four vessels of that type under construction in the United States are nearing completion and will soon be ready for shipment. They will be taken apart and shipped in sections. Ten or twelve other boats of the same kind are under way at various American shipyards, and it is said that several are already on their way to Russian ports in neutral vessels. One American submarine of a new type was shipped to Russia some months ago, and reports recently received in Washington from official sources indicate that at recent tests near St. Petersburg the boat's performance was considered remarkable.

The shipment of these boats from American ports to a belligerent power has brought up the question of whether the United States Government, by permitting such shipments, is violating its neutrality obligations. In reply to that question it is pointed out that the American Government more than thirty years ago took and has since maintained the position that a torpedo-boat craft which could not cross the seas under her own steam, but which had been taken apart and shipped on a neutral vessel, was, to all intents and purposes, merely merchandise. Such "merchandise" is, of course, by its very motive contraband of war and subject to seizure, but that fact by no means proves that its shipment from American ports amounts to a breach of neutrality. Officers of the United States Government declare that even if official statements should be made to the State Department by representatives of the belligerent powers concerning the shipment of such craft to Russia or Japan, it is doubtful whether any action could be taken. It is understood to be the view of those in authority that if the submarines are taken apart, crated and shipped on a neutral vessel, which must take her chances of capture and confiscation or destruction, it would not be possible for the United States to take action in the matter.

Successful Weeding Machine.—An American firm has placed on the market a weeding machine which is said to keep gardens freer from weeds than could possibly be done by hand labor in the old, back-breaking way.

Ships That Do Not Return.

IN last month's number THE AMERICAN EXPORTER described briefly "a boat that digs its own canal," the vessel being one used in operations of gold mining in the desert regions in the Far West of the United States. Some further description is warranted by the success of this novel craft and by the fact that others of its kind are under construction for use in the deserts of Asia and Africa, where the sands are known to be gold-bearing. The introduction of this queer ship—which is not a ship at all, but a desert-dredging machine—is regarded by mechanical experts as the beginning of a new era in gold mining. Vast desert tracts in America have been bought, and great areas in China are under survey for the use of this inland ship. Two vessels of this strange type are ready now for shipment to Asia, and their construction and operation are extraordinary. They dig their own canals and their own lakes, and these bodies of water move across the country with the vessels they bear. Over the course they once take the big boats never return. They absorb the treasure as they pass, and they leave not even a ripple of water to mark their progress; instead, in their wake are piled mounds of boulders and bed-rock.

These gold ships are the culminating effort of more than fifty years of ingenious experiment, inspired by promise of bewildering fortune. Take the ancient ark as it is popularly pictured, combine it with a river or estuary dredger, add a large section of a modern battleship, half a score of hoisting-cranes, pile-drivers, steam-hammers and battering-rams, and some conception may be had of what one of these wonderful gold ships is like. A great steel ladder extends in front of the vessel, like an inverted bowsprit. Up and down the ladder march in endless procession bucket-shaped plows with mouths of forged manganese steel. The chain that carries them will support a weight of 500 tons. These keen-edged scoops will cut through solid rock. A marine engine drives them with irresistible force. They delve into the banks ahead of the ship, literally eating up the land. Gorged with rock and sand, the buckets mount the ladder again, and along a huge gantry are carried back to a rotating cylindrical screen, into which they discharge their contents, at the rate of thirteen buckets a minute. Each one of these steel carriers contains five cubic feet of earth, so that an amount of material equal to the contents of three city dump-carts is poured every minute of the day and night into the whirling cylinder.

Five thousand gallons of water a minute are simultaneously forced into the revolving mass. The screens make twenty revolutions every minute. All the principles of mining employed in pans, cradles, long-toms, sluices, grizzlies and amalgam plates are combined in the winnowing process. Tables fitted with eccentric cams, to hold down the coverings of cocoanut matting and expanded metal, catch the gold particles. Riffles containing mercury and amalgam plates are also used, but the cocoanut meshes are depended upon to catch most of the gold. These mats are frequently put through a process of washing in a tank, and a sediment which collects in the bottom is run through a centrifugal amalgamating machine. The amalgam is then heated, the quicksilver expelled and the fine gold remains. All this is done by machinery.

It is estimated that less than one-tenth of 1 per cent. of the gold in the path of the ship escapes. Placer fields which had been worked over five and six times are now being harvested at great profit, so completely do these ships carry off the yellow metal. The ships can even secure paying quantities of gold from the discarded dumps of other mines. Although 300 tons of steel machinery are operated on one of these monster craft, a solitary winchman, aloft in a sort of conning tower, controls the entire mechanism. Levers, brakes and handles, working in quadrants, are all about him. Every part of the complicated vessel is under separate control, and all obey the direction of the winchman with the fidelity and precision of trained soldiers in a regiment. Some of the ships are equipped with enormous steel legs, or spuds, which extend to the bottom of the artificial sea and enable the big boat literally to stride from point to point in its advance.

A remarkable fact is that, in mining with these ships, earth can be handled at a cost not exceeding 3 and 4 cents a ton. The total expense in a day in the operation of one of the great vessels is sometimes less than \$30. The ships cost from \$50,000 to \$95,000, according to size. The first year's cruise will pay for the ship itself, will pay the cost of the land, even at \$5,000 the acre, will meet all expenses, including repairs and depreciation of machinery, and still net the owner over \$100,000. These are figures of actual operations, and regarding land carrying a low proportion of gold. Many are reaping a profit of more than 600 per cent. on their investment. One of the gold ships will devour an acre of earth every month. There are now 100 vessels in the unique Pacific coast fleet.

Private System of Wireless Telegraphy.

ONE of the largest firms engaged in the manufacture of electrical apparatus and supplies in the United States of America has extensive factories in two cities, which are 235 miles apart, and is about to connect them with a wireless telegraph system which it will operate for its private use. The wireless line will be experimental, though an eminent electrician says that it is in every sense practicable and will be of considerable commercial utility to the company. This will do away with the constant stream of telegraphic messages by wire between the two plants and in part with the use of special direct telephone line now in use.

Automobile for Sportsmen.

PERHAPS the most novel of recent designs in American automobiles is one intended for the use of hunting parties. This vehicle, built by a firm in Boston, Mass., U. S. A., will accommodate three persons, and is what might be called a palace automobile. It has a 16-horse-power motor and is built with a strong frame of wood, braced with steel rods, 16 feet long, 4 feet 10 inches wide and 6 feet high. For about 4 feet from the flooring the sides and part of the rear end are sheathed and painted a terra cotta, then varnished. The roof is of waterproof carriage leather, and extends over the entire frame, the hood in front reaching over a foot beyond the front wheels.

Hung from the frame, about three feet below the roof, is a 4 by 6 foot spring bed, with a hair mattress and full equipment of blankets. The seat in front will accommodate three, and the bed may be reached either from front or rear. Just in front of the steering-gear is a curtain, which may be rolled down, and a similar curtain at the rear converts the body of the vehicle into a cozy room, which is lighted by a single incandescent electric light, the power being furnished by storage batteries.

Under the bed is a space 3 feet high, 7 feet long and 4 feet 10 inches wide, in which are stored an aluminum camp outfit, clothing, gasoline and provisions of various kinds. There is also an electric heater, which may be used as a radiator, or to heat soldering-irons, or for cooking purposes in case of emergency.

The machine is equipped with extra tires and two sets of electric batteries. There are also two acetylene headlights, two kerosene headlights and a kerosene rear-end light, all of which may be detached and utilized for illuminating the interior of the car.

The gentlemen for whom this vehicle was built run it night and day, one managing the machine, while the other two sleep, and, according to one of them, "the bed is as easy as that of a Pullman sleeper, except when you strike a rock." As they travel they will select spots for camping when the roads are bad. Meals will be obtained at farmhouses and hotels, or, when desired, can be prepared aboard the automobile. While the weight of the car is a little more than that of the regular body, no difficulty is anticipated in maintaining the speed of the car, if the tires withstand the extra strain.

Battleships Are Machine Shops.

TO some extent it is undoubtedly true, as naval experts declare, that the modern battleship is merely a floating fortress, but it is equally true that such a vessel is a floating power-house and machine-shop. To illustrate: It is worth noting that the contract for the 16,000-ton battleship to be built by the United States calls for the following tools, all of which are to be operated by electric power: One screw cutting back geared extension gap lathe, to swing 28 inches over the upper ways and 48 inches over the lower ways, and to take between centers 10 feet when extended. One 14-inch screw cutting back geared lathe, to take not less than 4 feet between centers. One column shaping machine of about 15 inches stroke and not less than 15 inches traverse. One upright drill press, to drill up to 1½ inches in steel, 14 inches from edge of work, with at least 14 inches traverse of spindle. One 16-inch sensitive drill. One universal milling machine, with at least 18-inch table feed, 4½-inch traverse and 13-inch vertical feed. One combined hand punch and shears, with 6-inch shear blades, to cut ¾-inch round iron, shear ¾-inch steel plate and punch ¾-inch holes in ¾-inch mild steel plates 4 inches from edge. One emery grinder on column, with two carborundum wheels 12 inches in diameter and 2-inch face. One 4 by 30 inch grindstone, with iron trough, on legs. Six bench vises. One blacksmith forge. It is also specified that all necessary and usual spare parts, tools and accessories for the machines mentioned shall be included in the contract.

Trolley Towboat for Canals.

THERE has been built in Toledo, O., U. S. A., a boat for towing on canals which has given such excellent results that it may solve the vexed problem of moving canal boats by power. The boat is built on the catamaran principle, and between the two hulls is submerged a screw propeller, which is 20 feet long and 4 feet in diameter in the center, tapering to a fine point at each end. Motion is given to this by an electric motor carried on the boat, and connected by chain and sprocket wheels, the current being obtained in the usual manner by an overhead conductor and trolley pole. These trolley poles are so designed as to permit of a boat sheering off to one side in passing another.

The screw is revolved at low speed, and, by reason of the pointed ends and peculiar construction, it is claimed that no objectionable back-wash occurs. It apparently screws its way through the water in an entirely different manner from the ordinary propeller, and a slight inward curve given to the after-part of the two hulls throws the current coming between them into an eddy under the stern, no movement of the water being perceptible at the banks of the canal.

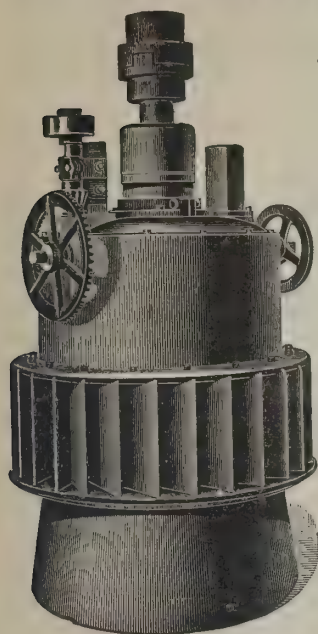
Practical Hydrographic Work.—An appropriation of \$1,500 recently voted by the Legislature of the State of New York, U. S. A., will be used in maintaining records of the rise and fall, the ordinary outflow, floods and droughts of many streams in the State. The work has gradually grown until there is hardly a section of the State in which some river is not systematically measured, and at the present time the condition of streams in more than fifty places in the State is regularly reported.

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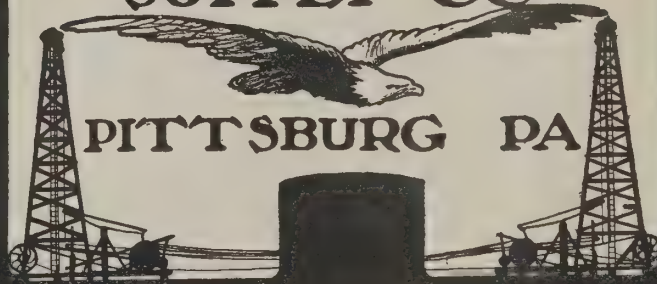
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Good-Road-Making in America.

WHAT is known in the United States of America as the "good-roads movement" is producing enormously valuable results wherever it has been instituted. Its purpose is gradually to establish a vast system of improved public highways throughout the country, thus affording easier means of communication between producers and consumers, facilitating the delivery of mails and affording fine routes for the prompt movement of troops in case of military emergency. In many States this project receives direct State aid, varying from one-third to three-fourths of the whole cost of road construction. Under this arrangement the State of New Jersey has already built about 1,000 miles of road, and the States of New York, Massachusetts, Connecticut and Pennsylvania have each built about 500 miles, while several thousands of miles of additional highways are projected. It is intended in several States that the crushed stone required in building these modern roads should be prepared by the convicts confined in penal institutions. It takes about 2,000 tons of crushed stone to make a mile of good macadam road. If this stone were hauled by the railroads from the penitentiary quarries to the places where it is needed, the average haul would not be more than 100 miles, and the roads could well afford to make a rate of 50 cents per ton, or \$1,000 for freight charges on the stone needed for each mile of road. The rate mentioned would be about half a cent per ton mile. The railroads make much lower rates on wheat and coal and other bulky commodities. Every railroad benefits by the building of good roads in its territory, and there is no doubt that traffic managers would take a liberal view of the proposition and make rates that would barely cover the cost of hauling the stone.

If the State furnishes the stone free of charge, on board cars at the penitentiary quarrying and crushing plants, the counties would get stone by merely paying transportation charges, which would not exceed \$1,000 per mile. The work of road improvement should be carried outward from railroad stations anyway, and the teams that haul the stone out would travel on good roads and their traffic would help to roll the stone into a smooth condition. In a level country the entire cost to the county ought not to exceed \$4,000 per mile, and might be less. An expenditure of \$50,000 per year in an average county would begin to show results in a few years, especially in counties where the traffic centralizes in the county seat. There are enough convicts in every State to furnish the stone, if they were put to work with modern stone-crushing machinery, and it is better to employ them on a rock pile than to have them competing with free labor in industries whose product must be sold on the open market.

The Ten-Hour Clock.

AN interesting labor-saving device in computing time is a ten-hour clock now in successful use in a large manufacturing establishment in Philadelphia, Pa., U. S. A. This clock is different from the ordinary time-piece in this only, that over the usual twelve-hour dial another is fitted with a division into ten hours, and with the year ratio between the hour and minute hands changed from 12 to 10. The clock then read in hours and tenths of hours. When work starts in the morning both hands point straight up to "0." When the whistle blows the clock is started by pulling on a rope. At noon, when the whistle blows, the clock is stopped with the hands pointing at 5 o'clock.

Under the time-keeping system employed the men are instructed to enter on their time-cards the number past which the short hand stands, and to the right of this the number past which the long hand stands. These numbers, side by side, are entered on a time-card when a job is begun, and immediately above them two other numbers are placed when the job is finished. For example, a job is begun at 8.15 A. M. The time entered as shown by the ten-hour clock is 1, 2, and if the job be completed at 3.45 P. M. the time as shown by the clock is 8, 0. The difference between these is 6, 8 or 6 hours and eight-tenths, or 6.8 hours. This time paid for, say, at 27½ cents per hour, gives the simple operation in multiplication $6.8 \times .275 = \$1.87$.

The clock can be used as it stands for any length of hours or length of shifts. It is possible to arrange the starting and stopping mechanism of the clock, so that the act of blowing whistle will start and stop the clock. The use of this device simplifies the time-keeper's work and eliminates much of the liability to error which exists with methods usually employed.

Proposed Army Test of Motor Cycles.

GEN. FRANK D. BALDWIN, a distinguished officer of the United States Army, believes so firmly in the usefulness of motor cycles for military purposes that in order to determine their practicability for use in time of war he has suggested to the War Department the arrangement of a race between such machines from Denver, Col., to Washington, D. C., a distance of nearly 3,000 miles. He says if the department will authorize the expense he will arrange to have two enlisted men make the trip from Fort Logan, Col., to Fort Myer, Va., just across the river from Washington, one of the men to use a motor cycle at Fort Logan, belonging to the Government, and the other man to ride a motor cycle to be furnished by a manufacturer, and claimed to be superior to the one owned by the Government. It is expected that the War Department will authorize General Baldwin to go ahead with the proposed trial, and thus will be demonstrated to the fullest extent the practicability of motor cycles for army use.

Telephones in the Wilderness.

NOWHERE has the use of the telephone proved of larger practical value than in the great lumber camps in the forests of America. Formerly it was necessary to send men on long journeys, 25 or 50 miles through the wilderness, to carry reports or instructions from one camp to another. Nowadays the mill calls each camp in turn at stated hours, and receives reports and gives instructions to the foreman, and it is not necessary to dwell on the commercial advantage of maintaining such close touch between headquarters and outposts in any enterprise. Letters are read to men snowed in the forest 50 or 100 miles away, and answers dictated by the lumbermen to a stenographer who transcribes them at the office and then mails them to their homes. The relative contentment among the men which is established by this frequent communication is highly advantageous to the working force, and, therefore, to their employers. The applications of the telephone to the operations of logging are alike novel and useful. The lines are run upon forest trees along the banks of rivers, and telephones which are contained in sheltering boxes are attached to trees and connected to the line.

One of the worst difficulties of logging is the collecting of the logs together at some narrow place in a turbulent stream, and piling upon each other in a "jam" to which contributions are made by every log floating down the river to this spot. The formation of a jam results from some obstacle, and generally occurs without warning, and it requires great labor, fraught with peril, to remove the logs from their constricted position. It is frequently necessary to use dynamite, and much labor is destroyed by such explosions. With the use of the telephone warning of the initial formation of a jam can be given by one of the men patrolling the banks, who telephones to the men up the river to stop the further flow of logs at calm places, termed "trips," and it is an easy matter to break the small jam, for which further assistance can be had by summoning men from points lower down the stream. As soon as the small jam is removed the men above are told through the telephone to release the logs held at the "trip" and the stream of logs is resumed.

Beyond this the use of the telephone renders log-driving feasible on the smaller, rapid, rough streams, where it was formerly out of the question. Timber dams, with large sluiceways controlled by gates, are built at suitable points, and the men along the river telephone to the men at the sluiceways to open or close the gates as the water may be needed. A prominent lumberman in the State of Washington, U. S. A., was crippled for three years by an accident in the forest, and during this invalidism he directed his lumbering operations from his sick-room by means of telephones connected to his camps and logging-booms, thereby conducting a business of \$250,000 a year under physical conditions which, had it not been for the telephone, would have rendered him, in his helpless disablement, dependent upon other resources, instead of being a man of affairs.

New Method of Preserving Food.

AN ingenious method of preserving food has been devised by an American chemist, which is based on the fact that powdered gelatin, or thin sheets of the same material, not only do not spoil, but are capable of protecting incorporated substances from bacteria, moisture and other agencies which bring about decomposition. Thus, to make a concentrated beef extract, tea or coffee extract, soup, etc., the liquid is mixed hot with 1 per cent. of primary gelatin, which differs from the commercial article in not having the glue-like taste of the latter.

After cooling a jelly is formed, and this is cut into thin films and dried by a current of air until it becomes brittle. When this condition is reached the sheets are then reduced to a fine powder, which will keep indefinitely. While it will absorb moisture it does not do so to a degree to occasion decomposition, and the moisture is subsequently given off in dry air. The powder, while likely to cake, forms a brittle cake, not interfering with its use, while it is too hard for insects. When placed in warm water it dissolves immediately, and is thus ready for use. If heated above the temperature of boiling water before packing all disease or other germs will be killed, and to secure the best results the powder should be packed air-tight. Such a concentrated food possesses many advantages, and is susceptible of wide applications, as upon explorations.

Oil Engine of New Design.

AMERICAN machinists are greatly interested in a new design of oil engine invented by an engineer residing in Chicago, Ill., U. S. A., which embodies a new development of the internal combustion motor and its adaptation to the use of crude oils or oils of a specific gravity that precludes their use in motors of the ordinary type. Like all engines suitable for crude oil the latest innovation has provision for the injection of water into the cylinder before compression. This has the effect of allowing a much higher compression without preignition than is ordinarily possible, and it has other important effects. The builders say that the water vapor prevents the decomposition of the petroleum to a great extent, enabling the engine to run long periods with crude oils without leaving an excess of deposit on the vaporizer's walls.

Alaska's Gold Output.—Shipments of gold from Alaska to the United States closed for the year on September 25th. The output for 1904 is estimated at \$25,000,000.

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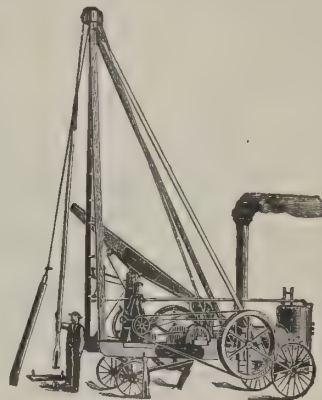
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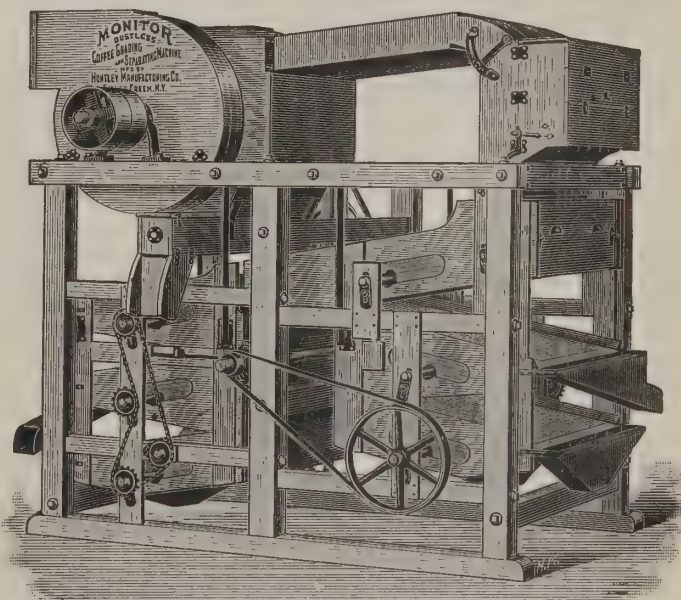
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Success of American Farm Implements.

AMONG all the splendid displays of the products of European energy and skill now on view at the St. Louis Exposition there is not one of farming implements. In fact, there is but one foreign exhibit of that character, and it comes from Canada, where it was produced in a factory controlled by an American corporation. The absence of such exhibits from the European collections at St. Louis is not due to accident or oversight. There is a reason for it, real and convincing. It is due to a general recognition throughout the world of the superiority of American farm implements in design, workmanship, efficiency and cheapness. This standard of excellence is attributable to a combination of tributary conditions. For instance, beyond the United States of America the market for agricultural implements is cut up and divided by a maze of national boundaries, and the farmers of each country are burdened by local prejudices, which the manufacturer must obey in designing his machines. The European manufacturer can, therefore, find only a small market for any one design that he may produce, because each country demands a different design or style of implement. In the United States there are 80,000,000 people whose ideas of agriculture are substantially identical, and the American people are burdened by no prejudices or customs to embarrass the manufacturer.

Another point in favor of American implements is that in the United States there are no irrevocable methods or practices, the dominant idea being to use the most efficient and economical machine that the manufacturer can produce, and a new implement that proves satisfactory in Illinois is also demanded by the farmers of New York and California. This enormous market in the United States enables each manufacturer to turn out a large output of one design at a very great reduction in cost, as compared with a small output. With so great a market, demanding the best that can be produced, the manufacturer is stimulated to do his utmost in making better implements than his competitors. This is a great advantage which the American manufacturer enjoys.

The American manufacturer, with so great a variety of iron and steel to choose from, is able to use for each part the particular kind of material that will give the greatest strength, so that American implements are much stronger than the cumbrous implements that are made in other countries. American manufacturers created the modern implement industry of the world, and the banner of supremacy must remain for many generations to come in the hands of the men who have shown so conclusively their ability to lead in promoting the mechanical economy of agriculture.

Science in Food Preservation.

MODERN economies, as applied to the preservation of food supplies, have probably made their furthest advance in the United States of America. The purpose has been to equalize the supply, health interests requiring uniformity in quality and social needs demanding a broad variety which cannot be maintained throughout the year by natural resources alone. This equalizing of the supply has been brought about by two discoveries, associated with bacteriology; discoveries the beginning of which extends back many years, but whose perfection has only just been reached. The determination of the fact that any food can be kept indefinitely if it can be protected from the action of micro-organisms, and the further demonstration of the efficiency of heat in destroying even the most resisting organisms, has led to the perfection of the process of canning. To-day any food can be preserved indefinitely by canning, and the canning industry has assumed vast proportions. It is not only greatly modifying agricultural problems, by making it possible to preserve for future use otherwise perishable crops, but it is affecting social comfort, by extending the use of many a favorite food from seasons of plenty to seasons of scarcity. At the other extreme has been developed the cold-storage plant, based upon the fact that micro-organisms grow very slowly at low temperatures, and that foods which can be sufficiently cooked may be preserved a long time. This fact again has long been known, but the experiments with the perfected cold-storage plants of modern days have vastly extended the application of cold, until practically all meats and vegetables may thus be preserved. Even perishable fruits that are injured by freezing may be preserved for months in a perfectly fresh condition, and be brought out to rejoice the palate at almost any month in the year.

Utilizing Waste Products.

HOW the so-called waste products are utilized in American industries is strikingly illustrated in the operations of great sawmills. In these establishments nowadays nothing whatever goes to waste. Ten years ago the sawmill owners would pile their sawdust until they had a large heap, and then they would burn it, getting no return whatever. The most of them now have Dutch ovens for drying the dust, and they burn it in their furnaces, making the refuse pay for the operation. Still others have established paper mills and use their sawdust for making paper. In the olden days great logs were taken and squared and the slabs were thrown away. Now a very thin slice is taken off. Then a board is sawed and edged, and in that way hardly a perceptible fraction is lost with the bark, and even the bark has its uses.

American Lumber for Jamaica.—Recent lumber shipments from Savannah, Ga., U. S. A., included 600 tons of orange-crate material consigned to Kingston, Jamaica. The material will make more than 100,000 orange boxes.

Improved Type of Electric Clock.

AFTER experiments extending over many years, American inventors have produced an improved form of electric clock which, it is predicted, will displace the old system of weights and springs for operating the mechanism of timepieces. The simplicity of this clock immediately recommends itself to all, and jewelers and clock manufacturers anticipate better results from this kind of timepiece than from any of the old-fashioned ones. By means of an electro-magnet and a pivoted armature, to which a pawl is attached, that moves in the ratchet-wheel, the ordinary springs and train of wheels are dispensed with. With the swing of the pendulum the circuit of the electro-magnet and a battery is opened and closed. One good dry-cell battery will operate the clock for months, and when the current is exhausted the cost of renewing is merely nominal. The electric clock thus does away with intricate machinery and the trouble of winding it every few days. The construction is so simple that any one familiar with the element of electricity can repair it. As the repairs of clocks and watches constitute a good part of the trade of the retail jewelers, the electric clock is not apt to prove so popular among them as the weight and spring clock.

The ease with which any number of these electric clocks may be operated in synchronism is an advantage of no small moment. In factories, mills and large manufacturing plants, where it is essential to have the exact time in all the rooms, the electric clock will prove of peculiar value. By removing the pendulums from all but one clock, with the others connected in circuit, the exact time can be kept with all the clocks in the plant. Furthermore, the regulation of timepieces by electric power from some central station is thus greatly simplified. With a wire running to the main clock of the plant an exact regulation of all in the series could be instantly obtained.

Electric clocks for watchmen have also been devised, so that it is impossible for the operator to change the register, or in any way make the clock show the wrong time when touched. The electric apparatus is carefully locked inside the case, and when the watchman puts the key in to register the time of his patrol it is impossible for him to manipulate the work in any way to suit his plans.

Crude Oil to Lay the Dust.

CRUDE petroleum is now successfully used to lay the dust on the tracks of the railway which crosses the great Mohave Desert, in the State of California, U. S. A., and the discomfort hitherto attending that journey has been removed. Formerly the desert dust was so penetrating that it entered through the double windows of sleeping-cars, even though the windows were tightly closed, stifling the traveler and ruining his clothing. There was no escape from it. If a passenger retreated from the stifling air of the car to the rear platform he was blinded, not only by the flying sand, but also by the showers of hot cinders belched out by the locomotive. Driven back into the car, the passenger prayed, half sick, for the quick transit of the desert. But the blistering, shifting Mohave has lost its greatest terror. Only the heat remains, but this is uncomfortable only in the summer months, and may be avoided even then by a night ride across the plain. The company has bathed its roadbed all the way across the desert with crude oil. The California oil has an asphaltum base, and it has soaked in and bound the sand together in a compact mass, so that not a particle of dust can be raised, no matter how swiftly a train is traveling. The storms of the desert sweep the sand on to the right of way, but the smooth-oiled surface affords it no resting-place and it passes on. Oil instead of coal is also burned in the locomotives, doing away with cinders, and car windows are now left open all the way across the Mohave Desert and in other places where dust and cinders formerly assailed the passengers.

New Three-Wheeled Plow.

ONE of the most valuable of the new farming implements recently introduced in the United States of America is an improved type of three-wheeled riding plow, the improvement consisting of what is called the "high-spring lift." This idea has been generally adopted by all the plow manufacturers, and it makes a plow far superior to the three-wheel plows heretofore in use. The plow beam is supported on two cranks or bails, on which the plow is raised and lowered in the field. The support on two cranks keeps the bottom of the plow level, and the heavy supporting springs balance the weight of the plow, so that a child can raise it out of the furrow. While the high-spring lift has merely made it easier to operate a single plow, and has made the plow work a little better in the furrow, this improved construction has been found indispensable in making gang plows. The two bottoms of a gang plow are too heavy for a man to handle them conveniently by a lever, but the spring lift has made gang plows very popular among American farmers. One man, with four horses and a gang plow, has no difficulty in plowing five or six acres per day, and the plows do faultless work.

Automatic Hydrant.—Recent American inventions include an automatic hydrant for use in parks and other public places. Instead of attaching the metal dippers by chains to the hydrant posts, this device provides that the chain shall be attached to a handle. The weight of the dipper depresses the handle and keeps the water from flowing. When a drink is desired, the act of picking up the dipper releases the spring actuating the cut-off valve and water runs without further turning on.

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 "Ohio" Self-Feed Ensilage Cutters and Blower Elevators.
 Metal Bucket Chain Elevators and Root Cutters.

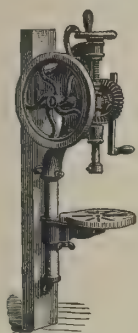


Fig. 742. No. 12.

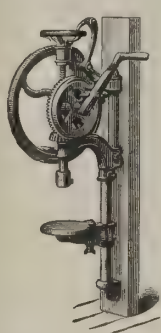


Fig. 731. No. 1.

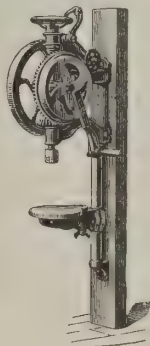


Fig. 732. No. 2.

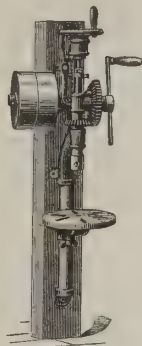


Fig. 746. No. 12.

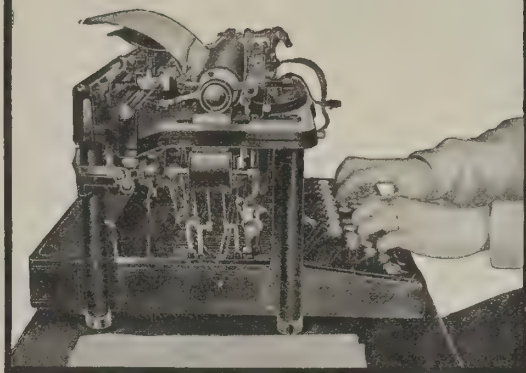
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WE HAVE 10 OTHER SIZES.

They are reliably constructed, light-running and work perfectly.

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REMINGTON TYPEWRITER

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"The Standard," Style "B," Without Switch.

Our Fans are used in all parts of the world. Our experience with foreign requirements enables us to meet all conditions, especially in respect to special insulation. Other strong points are artistic design, high finish, economy in operation and blade-carrying power.

Recommendations of our customers are our best guarantees.

**CEILING, DESK and BRACKET types, for
all direct-current circuits.**

Write for further particulars, descriptive literature, prices, etc.

Our Standard Motor Book (20 pages), illustrating and describing fully our complete line of Standard D.-C. Motors and Dynamos up to 15 H.-P., cheerfully mailed for the asking.

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MANUFACTURERS OF THE
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ROLLED-PLATE, FIRE-GILT,
NICKEL
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Gents' Watch Chains in all varieties of style and length.
 Artistically Designed Ribbon and Metal Fob Chains,
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HIGHEST QUALITY. POPULAR PRICES.
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Order through any buying and shipping agent in New York or
elsewhere.

Varied Uses of Asbestos.

RECENT disasters in America and other countries, involving dreadful losses of life by fire, have greatly increased popular interest in the United States in asbestos as a fireproof substance. The uses of asbestos, apart from its value as an immediate protection against flame, are varied and constantly increasing. Asbestos cloth is used for purifying water, for filtering acids and for other domestic purposes, and also in sugar refineries, in smelting works and in glass and iron works as a protection against fire and heat from molten metals. In laundries and print works this cloth is used for covering steam rollers, etc. Aprons, mittens, gloves and other articles of wearing apparel are beginning to be made in some considerable quantity from this mineral, as are also ropes of various sizes.

Other uses of asbestos are in the manufacture of felt and cloth for covering dining-tables to prevent the hot dishes from injuring polished surfaces, for stove mats, for iron-holders, iron-rests, etc. Asbestos yarn is also now manufactured which can be crocheted and knitted into fireproof lacework as fancy hangings for lamps, etc. Various sizes of cord, twine and string made from asbestos fiber are adapted for all kinds of work of suspending metals, retorts and crucibles in contact with fire, and for sewing asbestos cloth and binding materials that are exposed to the action of fire or acid. In the glass-worker's industry asbestos is used in the manufacture of shovels, baker's screens, disks, bottoms, etc. The sheets of asbestos are hardened and stiffened and are durable under very intense heat. Various shapes of soldering blocks are made from asbestos, which are especially designed for jewelers, silver-smiths, dentists and others who use the blowpipe for soldering, melting, or in similar fine work. Still other uses of asbestos are in the manufacture of fire-proof paints and as packing in the manufacture of fireproof safes.

Steel-Making Capacity of the United States.

ACCORDING to statistics compiled by experts of established reputation, the steel works of the United States have a yearly productive capacity of 13,551,000 tons of Bessemer and 11,335,100 of open-hearth steel—a total of 24,886,100 tons. It appears that the United States Steel Corporation controls 59 per cent. of the Bessemer steel-making capacity, but only 26.4 per cent. of the open-hearth furnaces. While the total increase in yearly capacity for producing Bessemer steel has been 613,000 tons, or 4.7 per cent., in three years, that of the Steel Corporation has been—by construction and purchase—373,000 tons, or 4.8 per cent.—that is, about even with the total gain. On the other hand, the total increase in open-hearth furnace capacity has been, in three years, 3,045,350 tons, or 36.7 per cent.; the Corporation's increase—chiefly by purchase—was 778,500 tons, or 27.2 per cent., being considerably below the general gain—that is, the Steel Corporation controls now a smaller proportion of the open-hearth steel output than it did when it was first organized, and about the same proportion of the Bessemer production as at that time.

Sulphur for Export.

ANOTHER line of American exports has been opened by the recent shipment of several large cargoes of sulphur from the State of Louisiana, U. S. A., to Europe. These shipments are particularly interesting, in view of the fact that the United States uses more sulphur than any other country in the world, consuming from 150,000 to 175,000 tons a year, a considerable portion of which has been imported from foreign sources. The development of the Louisiana deposits, however, seems likely to supply domestic requirements and leave large quantities available for use in Europe, where the markets are at present dependent upon the rich deposits in Italy. The quality of the Louisiana sulphur is good, frequently analyzing 99.5 per cent. sulphur, it being practically refined in the course of extraction by the steam process. The primary cost is small, so that with an increasing output Louisiana will occupy a unique position in competition with Italian producers.

Dynamite in Farming Operations.

IN the western region of the United States dynamite is extensively used by farmers to break up the "hard pan" stratum just underneath the surface, below which there is good soil and ample moisture. In the sagebrush and alkali regions this stratum of "hard pan" will not let the moisture come to the surface, nor can tree roots and alfalfa roots reach the moisture. So the surface is dry alkali, the mother of sagebrush and nothing else. The dynamiters believe that by smashing this barren and rebellious stratum they can make the moisture come up and the roots go down. Crops have been planted over a considerable tract of dynamited ground. In the fall we shall know how good a farmer dynamite is.

Hose Coupling to Fit Any Hydrant.

WHEN fire companies were summoned from other cities to assist in fighting the great fire in Baltimore, Md., U. S. A., in February, 1904, many of them found on arrival that they could render no service, for the reason that their hose couplings could not be connected with the local hydrants, being of a different size. To provide for such emergencies a new device has been invented, which permits of hose connection to any hydrant, larger or smaller. This makes connections of all cities and towns interchangeable, and an absolutely tight joint can be secured in from two to seven seconds.

English the Language of Commerce.

UNDER the changing conditions of international intercourse English is now the dominant language in the commerce of the world. One indication of its growing importance is the recent action of the school authorities of the German Government in making English an optional study in the public schools of Saxony. This action was induced by a petition addressed to the Government by the Dresden Schoolmasters' Association. The petition was an excellent syllabus of the arguments in favor of English as a subject for study in the German public schools.

It is only within recent times that English has been taught carefully even in English and American schools. The old theory was that a student learned English best by reading the Latin and Greek authors. While the benefits of a knowledge of Latin and Greek are very great and certainly assist in acquiring the accomplishment of using English correctly and elegantly, the close attention now given to English in our own schools will improve the average quality of English composition.

We scarcely appreciate what a treasure we possess in our English tongue. The vocabulary of English has been enriched by plunder from every land and every language. It is a flexible tongue, adaptable to any idea, and a tongue which welcomes accessions when those are necessary. It is not by its intrinsic virtue, however, that the English language is spreading and is becoming the cosmopolitan medium of communication, but rather by the increasing importance of the people who speak English. The British and the Americans control a large portion of the world's trade. Their influence is felt everywhere. They sell to everybody and everybody wishes to sell to them. Verily, the English language has come forward since the time when Bacon, despairing of the perpetuity of the English tongue, translated some of his works into Latin.

Foremost in Furniture Making.

IT is claimed on behalf of Grand Rapids, Mich., U. S. A., that more furniture is made there than in any other city in the world. The city enjoys the advantage of cheap and abundant water-power, close proximity to vast supplies of valuable woods used in the manufacture of furniture and ample means, both by rail and water, of reaching the markets. There are ten particularly large furniture plants in the place, but altogether the town boasts of sixty-five factories devoted to furniture, which easily makes it the greatest center of production in this line of goods on earth. The fame of Grand Rapids has spread throughout every part of the habitable globe, and buyers from every land go there twice each year to make selections. Three generations of skilled furniture workmen have been reared in Grand Rapids, and to to-day the city can justly lay claim to producing as splendid specimens of cabinet goods as are made anywhere.

Good Fuel Free of Cost.

IN the great shoe manufacturing city of Lynn, Mass., U. S. A., enormous quantities of fuel wood are given away every season. The shoe manufacturers, in order to keep their product fashionable and correct, change their lasts every season. Thus, as soon as a season is over, thousands of lasts become worthless except for burning. The manufacturers might sell the lasts, but for some reason or other they don't do this. They give them away, and the Lynn people appreciate this generosity. At any rate, it is possible in their beautiful town to see a Lynn man with a grateful look on his face taking home a load of lasts in a cart. The lasts make admirable fires. The good, hard wood in them gets red hot and burns with a great glow of heat for a long time, like coal. The only trouble is their shape. They look, you know, like feet. To see them flaming in a fireplace gives a stranger a shock at first.

American Traction Trucks Abroad.

RECENT orders to a Philadelphia manufacturing company call for twelve single trucks, traction type, for earliest possible shipment to Barcelona, Spain. Another order was for ten traction vehicles of maximum power for Tokio, Japan. These last mentioned vehicles are to be of identical build with a large number recently shipped by the same firm to Dunedin, New Zealand.

American Cars for London Underground.

THE American Car and Foundry Company has received the first order ever placed with foreign builders for cars for the London Underground Railway. The contract calls for 100 passenger cars of steel, with an understanding that if the cars are satisfactory the builders will receive contracts for 1,000 cars additional. German car manufacturers were active competitors for the contract.

Picking Cotton by Moonlight.—In order to save the fast ripening crop in the State of Georgia, U. S. A., the planters have put laborers to work picking cotton by moonlight. These scenes of activity in the cotton fields at night were necessitated by the scarcity of labor from which the South is suffering. The pickers are worked day and night, taking a rest during the hottest part of the day. A prominent planter has declared after a visit through the cotton States that the labor problem will cause much cotton to go to waste in the fields.

Knock-Down Office and Home Furniture for Export. The "GUNN" K. D. Sectional Bookcases.

Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

Base Section
List, \$2.65



THREE-SECTION CASE.

With top and base set up. Weighs 135 lbs. gross, 100 lbs. net, and of 6 1/4 cubic feet. This cut represents the entire line of sizes, and will make a case for 10 books or 10,000 books, growing as the books accumulate. Measurements are inside. All sections 10 1/4 inches deep and 32 1/4 inches long. Made of selected quarter-sawed oak and handsome polish finish.

THREE-SECTION CASE, as shown, complete - - - each \$10.76
SIX-SECTION CASE, as shown, complete - - - each \$17.98

IMPORTANT NOTICE.—To secure full benefit of above, even sample orders should not be for less than the steamship minimum for issuing ocean bills of lading. Some steamship companies accept not less than 40 cubic feet, while others not less than 80 cubic feet. Six Three-section Cases occupy 40 cubic feet; Four Six-section Cases occupy 40 cubic feet. NOTE explanation of ocean freight on "Gunn" K. D. Cases: "An ocean rate of 10 shillings per 40 cubic feet equals a cost of eight cents per section, or about four per cent. on the cost boxed f. o. b. New York."

Specify "Gunn" when ordering. Orders received direct or through export houses. When ordering through the latter, to avoid errors, please mail us duplicate of order. Our catalogue, illustrating and describing the various styles of Sectional Bookcases and Filing Cabinets made by us, mailed postpaid.

THE GUNN FURNITURE CO., Grand Rapids, U. S. A.

Western Union and A. B. C. Codes used.

Cable Address: "GUNN," Grand Rapids.

We also make a full line of Roll and Flat Top Office Desks and Typewriter Cabinets.

A FEW REASONS WHY THE "GUNN" K. D. SECTIONAL BOOKCASES ADMIT OF DIRECT IMPORTATION TO THE TRADE.

The assortment is SMALL. All parts are INTERCHANGEABLE, making every possible size bookcase from the same stock. They require but little space in warerooms, as the cases are shipped K. D. (flat) and can be set up as required, with no tools but the hands.

Our method of boxing K. D. (flat) insures arrival of goods in PERFECT CONDITION, as NO POSSIBLE DAMAGE CAN OCCUR TO FINISH AND NONE OF THE PARTS CAN SWELL OR WARP, as in ordinary furniture. Deliveries can be made in thirty days, and by using our special code, twenty days.

ADVANTAGES OF THE LINE.

The field to sell is very large, as the same stock meets the demand from offices and public buildings, as well as for home use—in fact, anywhere an article is desired to be covered from dust and moisture. Each sale made is a guarantee of repeated purchases for additional sections, as books accumulate. The sections can be added, vertically or horizontally, to fit the wall and space. The glass doors, when raised, disappear, sliding on small frictionless roller bearings. The "GUNN" is the only case in which a broken glass can be replaced by simply taking off the door, and without removing the books or taking the case apart. The cases, when set up, present a handsome appearance, with no objectionable features, and are as rigid as an ordinary bookcase.

We GUARANTEE the "GUNN" SECTIONAL BOOKCASES PERFECT IN ALL RESPECTS.

Special Offer for Export Only:

The prices here quoted (U. S. gold or its equivalent) include boxing for steamer, and delivered f. o. b. cars at New York City.



"Gunn" K. D. Sectional Bookcase.

This cut shows our knock-down (flat) construction. It is put together without nails or screws, or dowel-pins; the irons that are fastened to the shelves have upper and lower tongues that fit in the grooves in the bases, center sections and top sections, thereby binding all rigidly together.



Top Section
List, \$3.00

9 1/4" Section
List, \$4.15

9 1/4" Section
List, \$4.15

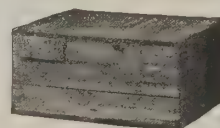
11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

11 1/4" Section
List, \$4.50

13 1/4" Section
List, \$5.25

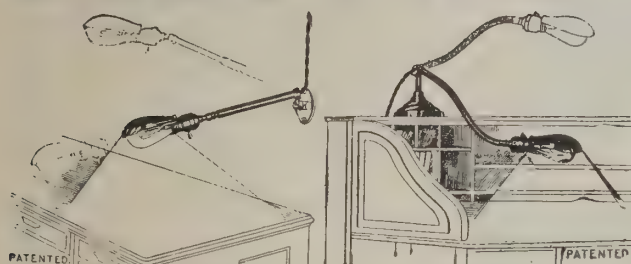
Base Section
List, \$2.65



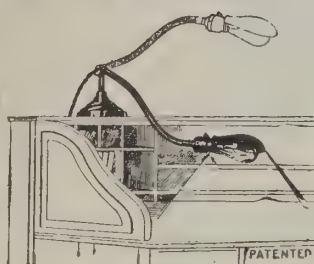
SIX-SECTION CASE.

Showing a six-section case with top and base set up, and the same case boxed K. D. ready for shipment; weighing 200 lbs. gross, 150 lbs. net, and of 10 cubic feet, thus securing a low freight rate, occupying but little space in warerooms and on shipboard.

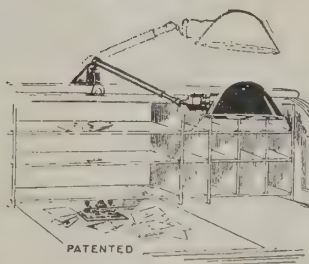
ELECTRIC LIGHT FIXTURES



Style No. 40.



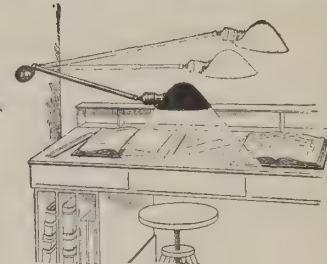
Style No. 50.



Style No. 30.



Style No. 1.



Style No. 290.

By the use of the fixtures illustrated above the electric light can be adjusted to any conceivable position. The arm is telescopic and extendable, and is mounted on a ball-bearing friction joint. They are without question the most adjustable, practical and durable fixtures on the market.

WRITE FOR CATALOGUE AND DISCOUNTS.

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PARQUET FLOORS AND FLOOR FINISHES,

Also Floor Wax, Powdered Wax, Wax Oil for Kitchen Floors, Surface Renovator and Weighted Polishing Brushes.

Orders filled through commission houses. Correspondence solicited.

Americans Eating Less Meat.

VITAL statistics compiled by life-insurance experts indicate that the American people are curtailing their use of meats and taking more to a vegetarian diet. In the matter of mutton, for instance, every 100 Americans in 1850 consumed 94 sheep, nearly a sheep to each man, woman and child; in 1900 the consumption had been reduced to 50 sheep to every 100 persons, a reduction of almost half. More remarkable still has been our turning from pork, 118 hogs to every 100 persons in 1850—more than one hog for each man, woman and child—to 43 hogs in 1900. We are still large eaters of beef, however, though here, too, there is a reduction of 20 per cent., from 25 beeves to 100 persons in 1850 to 20 beeves in 1900.

But what of milk, butter, cheese, eggs and poultry, which must be considered as meat foods in contradistinction to those which are strictly vegetarian? Here, too, though the statistics do not cover the whole period of fifty years, we find interesting changes, mostly large increases. For example, in 1880 the supply of eggs was 920 dozen for each 100 persons, and in 1900 it reached 1,700 dozen. In the same period the supply of dairy products increased threefold. The only dairy product showing a decrease is cheese. Fifty years ago each person ate $4\frac{1}{2}$ pounds annually. In 1900 the amount had dropped to one-half pound.

Reducing all these various meat products to a common denomination—dollars and cents—we find that our meat diet as a nation has decreased in fifty years by about 36 per cent.

Science in Building.

IN the construction of tall buildings in the United States of America, known as "sky-scrapers," there is an application of scientific principles of which the general public knows little or nothing. People who sit secure and indifferent in the offices 200 or 300 feet above the pavement and hear the wind howl and hurl its blasts about the steel cage that encloses them think little of the mathematics on which their safety is based; but if that mathematics were not the surest product of the human mind they might find themselves at the bottom of a tangled wreck. Their safety depends primarily upon what is called "wind-bracing." This is a system of steel connections which, in the body of a tall building, serve a purpose similar to that of the interlacing muscles and tendons which bind together the bones of the human skeleton and enable it to act all together, as a unit, in resisting forces tending to upset or crush it. In a scientifically constructed building the force of the wind pushing against its upper portion arouses a resistance which is transmitted downward from story to story, and is distributed on all sides from member to member of the steel skeleton, until it is felt at the foundations, and thus the strength and weight of the lower portion of the building, lying in the shelter of the surrounding edifices, out of the reach of the wind above, are brought into play for the common defense, very much as the effects of a push against a man's shoulder are distributed throughout his muscular system, down to his feet, and are thus resisted by his whole body.

Developing Seedless Fruit.

HAVING successfully propagated seedless oranges and made decided headway toward the production of seedless lemons, American growers are engaged in efforts to introduce seedless fruits of many other species. The seedless tomato is already an accomplished fact, and the quality is excellent. In general, it appears that where the strength of the plant has not to go to the growing of seed the fruit is of superior quality. The seedless apple has also arrived. It has at the end opposite the stem a slight hard formation somewhat like that in a navel orange, but no seeds. Oddly enough, or perhaps it might have been expected, the seedless apple-tree does not have petalled blossoms. The apples grow out from little buds like the calyx of a flower.

Promising and partially successful efforts have also been made to propagate seedless plums and seedless grapes. The seedless watermelon appears to be a certainty of the near future. As far as they have progressed, the melon experimenters have obtained a fruit containing only a few seeds. It seems only a question of time when we shall buy in the markets all these fruits in a seedless state.

Novel Heating Arrangement.—The gas companies in the city of Baltimore, Md., U. S. A., are installing a novel arrangement for heating kitchens and furnishing hot water during the winter months. Heat for this purpose is derived from the ordinary house furnace. The object is to make it unnecessary to use the range in the kitchen during the winter. An appliance is placed in the firebox of the furnace to heat water, and this water is carried to a radiator in the kitchen for heating purposes, and to the hot-water boiler for consumption. It is estimated that the amount of additional coal consumed in the furnace is fractionally small, and the plan puts out of commission the kitchen range, which is superseded for cooking purposes by the gas range.

New Thing in Bottle Designs.—A new type of bottle is one that provides a permanent slide on top of the bottle, in which is a permanent and not removable cork. When the bottle is inverted, the cork slides downward past some small holes, through which the liquid contents of the bottle can run out. When the bottle is returned to an upright position, the cork seats itself by gravity. The device is intended for drug-store bottles, medicine bottles, whisky bottles in bars and other bottles in common use.

Electric Power on Railroads.

THAT electricity will ultimately displace steam for use as motive power on American railways is indicated by the policy recently instituted by one of the great carrying companies from whose central station in the city of New York nearly five hundred trains are despatched every twenty-four hours. The steam locomotives required to haul this enormous traffic will soon give way to electric motors of 2,200 horse-power each. These electric locomotives will have a speed rate of 75 to 80 miles an hour when attached to a heavy express train. They reach the top notch of electric locomotive construction in the world thus far, in their combination of power and speed. They have more than twice the drawing strength and four times the speed capacity of the locomotives that handle the Baltimore and Ohio's 100-train daily traffic in the city of Baltimore. Upon the successful operation of these colossal locomotives will depend to some extent the rapidity with which electricity advances in its contest with steam for the supremacy of the railroad traffic in this country.

On June 30, 1900, according to the United States census, there were 1,262 miles of electric railroads in operation in the United States. Two years later this mileage had increased more than 1,600 per cent., or to 21,920 miles of electric trackage. This has now advanced to more than 32,000 miles—it was 29,212 on the first day of the present year. This is all exclusively of lines in operation, while several thousand miles are building or are definitely projected.

Novelties in American Shoes.

INCLUDED in the very latest of American designs of fine shoes for women are several of exceptionally attractive character. The Blucher in Oxford, double soles and extension edges, wide or narrow toe, is put forward by the foremost dealers as a leading winter shoe, and the same style is to be had in the high-cut lace shoe. It is made in either enamel or box calf. The dress boot in patent leather will be of pointed toe, and the appearance of a blunt toe, unless there is a certificate of gout with it, with a dress suit, will be the cause of adverse criticism. Button boots, as heretofore, will be the only correct form for afternoon dress (they may be either of patent leather or calf), while the patent-leather pump will hold sway in the evening at strictly full-dress functions. The tan grain leather boot has no equal for storm wear, and will again be in vogue on wet days. Enamel leather seems destined to incase many feet this season, while heavy vici kid will hold its old admirers. It may be only temporarily, but for the present, at least, patent-leather shoes have been relegated to the boot-tree and wardrobe, in so far as every-day street wear is concerned.

Popular Regard for Trademarks.

AN American magazine writer of distinction, after a careful study of the whole question, contends that the purchasing public has a powerful sentimental attachment for distinctive and well-advertised trademarks. Many of these, he says, have been advertised for years, and the proprietors of them are ready to expend large sums of money and invoke the aid of an intricate system of patent law to control the so-called "good-will" of the trademark. So evident has the value of the trademark become that an advertising agent of importance has recently sent out an appeal to manufacturers to adopt one—as distinctive of their product. Of what does this good-will consist? Again we seem compelled to refer to the book of human nature. It is not because these trademarks are in themselves attractive or beautiful, or that they represent with unusual fidelity the article advertised; it is rather because the buying public has long been accustomed to this particular figure, or design, and through long years of association with it at home and abroad has grown to have a real affection for it.

Alaska as an Investment.

WHEN the United States Government in 1867 paid Russia \$7,200,000 for the territory of Alaska many leading Americans seriously contended that the Russians had decidedly the better of the bargain. The short-sightedness of that view is clearly shown by a few official facts. In 1867 Alaska imported nothing from and exported nothing to the United States. In 1903 it bought from the people of the United States \$9,266,504 worth of all kinds of merchandise and sent \$21,167,787 worth of gold, copper, tin, silver, fish, furs, fertilizers, wool and numerous other products of the country. In other words, in one year alone it paid back nearly \$2,000,000 more than the Government paid for the territory in 1867, and added to the actual wealth of the United States during the same period, approximately, three times the amount of the original purchase price.

Interesting Telephone Figures.

MORE than 600,000 additional telephones were installed in the United States of America last year by the leading company, bringing the total number used by its subscribers up to above 3,375,000—that is, one telephone for every twenty-four persons in the United States. These telephones are served by nearly 4,000,000 lines of wire—enough to make a 16-wire cable to the moon. The daily average of messages was last year upward of 10,000,000, the total number of messages for the year being therefore in excess of 3,650,000,000, or about 45 per head of the entire population of the nation.

The Universal (Tipless) Lamp



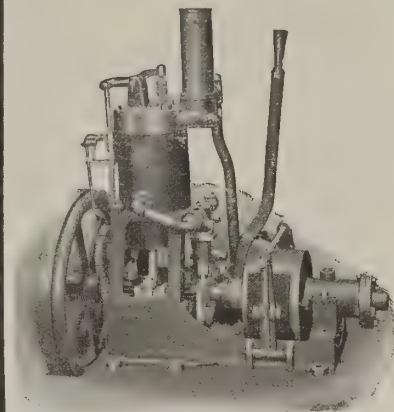
REPRESENTS THE HIGHEST ACHIEVEMENT IN LAMP MAKING
ALL VOLTAGES, CANDLE-POWERS AND BASES

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High speed launch engines
—one, two and three cylinders from 1 3/4 H. P. to 150 H. P.

Heavy duty engines for
main or auxiliary power in
vessels—two and three cylinders from 30 H. P. to 500 H. P.

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We want responsible agents in
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RAWHIDE LACE LEATHER



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YÖST TYPEWRITER.

Full Keyboard of 85
Characters,
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allows types to print direct
on paper, thus ensuring
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CENTRE GUIDE

preserves alignment permanently.

SWIFT, QUIET,
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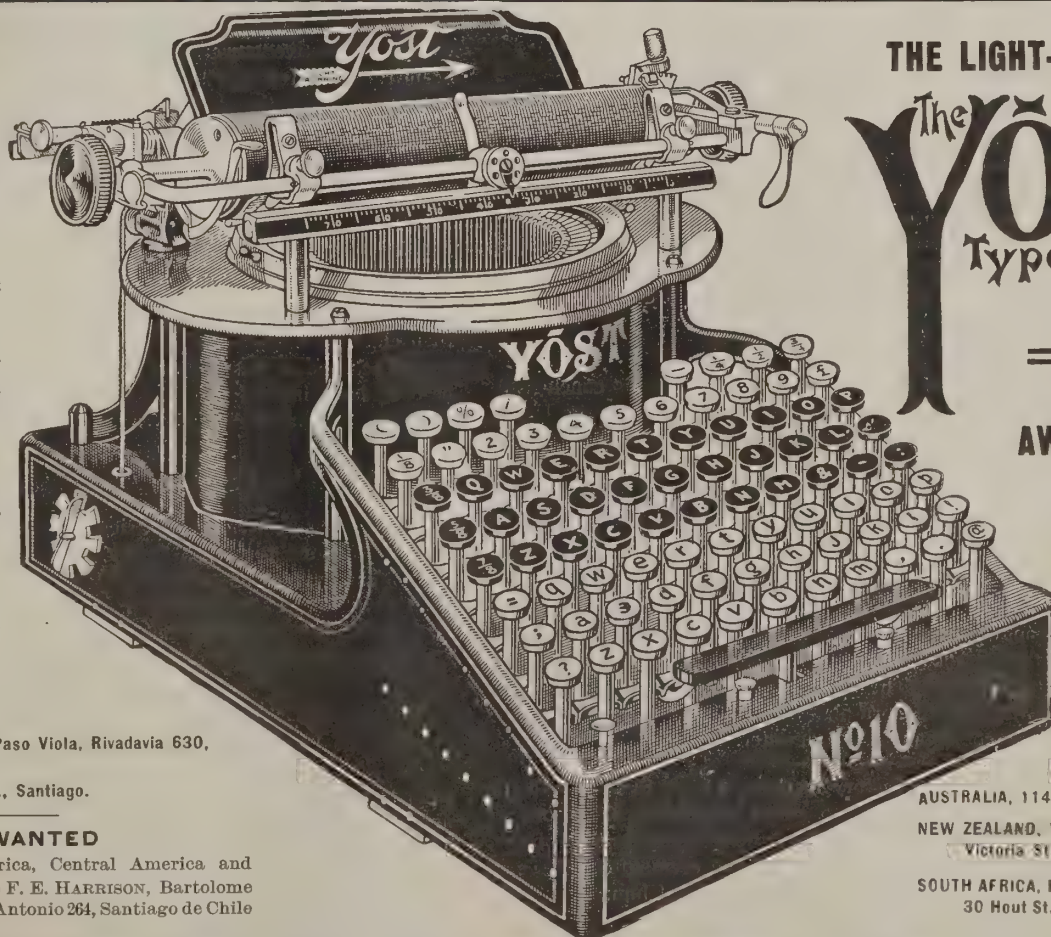
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ARGENTINE REPUBLIC, Francisco Paso Viola, Rivadavia 630,
Buenos Aires.

CHILIAN REPUBLIC, Chirgwin & Co., Santiago.

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In other States of South America, Central America and
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30 Hout St., Cape Town.

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PARIS, 36 Boulevard des Italiens. BUDAPEST, VII, Erzsébet-Korut 9-11, New York Palotaban. MADRID, Espoz y Mina 17. BARCELONA, Rambla
Santa Monica 2; and in all other large towns.

Taking Wireless Messages on Tape.

STEPHEN DUDLEY FIELD, a nephew of the inventor of the Atlantic cable, has devised a system whereby messages transmitted by wireless telegraphy can be recorded in the Morse alphabet on paper tape. The instrument by which this is done is called an amplifier. It is an electrically delicate machine of wire coils and magnets so adjusted as to record all variations in the electric current which passes through it. It occupies less than a half cubic foot of space, and one of its most novel features is the use of threads of glass one-one-thousandth of an inch in diameter to truss and connect some of the smaller parts. In the demonstration the usual telephone receiver was cut out from the electrolytic responder which received the wireless message. The current was turned into the amplifier instead and the message was clicked out in printed Morse characters on the tape. The amplifier, Mr. Field explained, was but a mechanical microscope for electricity.

The inventor declares that all the attachments, such as photograph reproducers and the like, now in use for wire telephone and telegraph lines, may be made by the amplifier available for any wireless or ocean cable system. By means of it a land line may be joined directly to a wireless one, and by this means a message might be sent through ether waves from London across the ocean to New York, and there turned into a wire and carried without interruption to San Francisco.

The same amplifier applied to ocean cables, it is asserted, will more than double the present speed of transmission and will allow the connection of cables and wireless or land lines direct, so that a message may be sent around the world by one operator without its being repeated from station to station. It is to ocean cables and wireless telegraph lines what Edison's carbon button was to Bell's telephone.

School for Judges of Livestock.

AN illustration of the careful methods with which the animal industries of the United States of America are conducted appears in the two weeks' course in stock-judging which has been established at the Agricultural College of the State of Iowa. This course is intended for the farmer and his son and all who are interested in the breeding, feeding and management of improved cattle, sheep and swine. Three days will be devoted to each class of stock. There will be two classes—one for beginners, in which will be studied the different market classes and grades, and another for those who have attended a previous course, in which will be taken up the characteristics of the pure breeds of domestic animals. In connection with this work, there will be a block demonstration, in which animals of different types will be judged on foot, slaughtered and then cut up to show the different market cuts and their value to the producer and the consumer. The classes in this course will alternate with those in corn and grain judging, so that all students may take all the work in both courses.

Telephone Aid for the Deaf.

RECENT experiments have shown that a modification of the telephone can be made highly useful to persons afflicted with deafness, and several forms of instruments designed for that purpose have already been produced. There has lately been patented in the United States of America an installation of this character which can be stowed away in any ordinary derby hat, the only portion of the apparatus exposed to view being two ear-tubes, which depend from the sides of the hat and repose in the ears. The sound-collecting bells are adroitly concealed in the sides of the hat crown.

Oil Fuel in Locomotives.

CONFIDENCE in the value of liquid fuel for locomotives is conclusively shown in the fact that one of the great railway companies in the United States of America is preparing to substitute oil for coal in 780 locomotive engines on a system comprising upward of 9,000 miles of road. This company operates lines extending as far as from the English Channel to the Golden Horn and back again, and the cost per horse-power with oil is only a third of the cost of coal.

Large Shipment of Plows.

ONE of the largest single shipments of American plows to foreign markets of which there is any record was started recently from a manufacturing plant in the State of Iowa. The lot numbered 1,000 sulky plows, fifty gang plows and a large number of corn-planters. Thirty-seven railway cars were required to carry the consignment to tidewater.

Strange Indifference.—The chief factory inspector of the State of Indiana says that in enforcing the laws relating to safety devices in shops one of the chief troubles is to get the employees to use them and treat them fairly. They are often ignored or discarded by the men, who seem often to see in them only reflections on a workman's ability to take care of himself.

American Coal Production.—The total coal output of the United States up to December 31, 1902, is estimated at 4,860,000,000 short tons. That means that a pyramid built of this material as high as Pike's Peak (14,108 feet) would have for its base a rectangle 1.14 miles square. If the coal were spread out over the States of Rhode Island and Connecticut it would cover both of them a foot deep.

Increased Demand for Wood Alcohol.

SHOULD the alcohol motor, now undergoing various tests in the United States of America, prove of commercial value as a power-producer, a largely increased demand for wood alcohol is morally certain to follow. To supply that demand and at the same time provide the large supply annually required by foreign buyers would necessarily involve an enlargement of alcohol production in the United States. It is pointed out, however, that this increased supply can be provided without any detriment to timber or lumber interests. The supply of wild woodlands suitable for charcoal-making, and incidentally, for alcohol distilling, is almost unlimited, and there is a possibility of industrial development in this direction that can scarcely be measured to-day. The annual fires in American forests consume wood enough to produce many millions of gallons of alcohol, and this enormous waste is only part of the loss. The lumber mills, in spite of their efforts to utilize all parts of the trees, waste millions of feet of wood that would furnish the charcoal-burner with excellent material for his work. By extending the charcoal and wood alcohol industry to new districts, the wealth derived from forests would multiply rapidly, and incidentally the cost of wood alcohol might be reduced to a point where it would prove a most efficient and economical fuel for the alcohol motors of the near future.

America's Great Fruit Industry.

THE greatness of the fruit-growing interest in the United States of America is indicated by the fact that the output of fruit of all kinds in 1903 amounted to \$132,000,000. The yield for 1904 will be worth considerably more. The orchard fruits have an annual average value of \$84,000,000; small fruits, \$25,000,000; grapes, \$14,000,000, and citrus fruits grown principally in California and Florida, \$8,549,000. The seven great fruit-growing States in the order of production are California, New York, Pennsylvania, Ohio, Michigan, Illinois and Indiana. Michigan has more peach trees than any other State. New York leads all other States in apples. Illinois is second, with an annual product of 9,200,000 bushels, Michigan coming next with 8,951,000 bushels and Indiana third, with 8,620,000 bushels. The apple crop of the country, which in 1900 was 175,397,000 bushels, has increased with the extension of orchards in the West. The apple crop for 1904 is one of the largest on record.

Gasoline Vehicles in Favor.

HOW promptly American manufacturers respond to the requirements of foreign buyers is admirably illustrated in the item of touring cars. In several recent years the American steam runabout enjoyed great favor—and justly, so far as can be learned—but there is now a demand for the gasoline runabout, which American builders are ready to supply. Aside from the change in motive power, these new light vehicles of American build have beautiful, graceful bodies and running gear unsurpassed in the world. The favor with which they have been received abroad is evidenced by the fact that 1,600 vehicles of the character went to foreign buyers last year.

Railway Passenger Traffic.

IT is officially stated that the railroads of the United States of America carried more than 695,000,000 passengers during the fiscal year ended June 30, 1904. These figures represent an increase of 45,000,000 passengers, as compared with the preceding year, showing in this way an average number of more than eight journeys a year for each of the 80,000,000 inhabitants of the country. Each one of these 695,000,000 passengers, as a living human being, had to be considered individually, and so each represented some part of the work of the passenger agent and ticket man.

Gifts to American Libraries.

GIFTS to American libraries during the year ended May 31, 1904, amounted to \$6,103,137 and 137,318 volumes. Of the money Andrew Carnegie alone gave \$1,507,600. Among the other gifts there were fourteen under \$10,000, fifteen of \$10,000, sixteen between \$10,000 and \$15,000, six between \$15,000 and \$20,000, five of \$25,000, three of \$30,000, one of \$40,000 and four of \$50,000 or more.

Utilizing the Sun's Rays.—At Los Angeles, Cal., U. S. A., interesting experiments have been made in using the heat of the sun to create power and to heat water for domestic purposes. At an ostrich farm near the city a solar motor is in operation every sunny day, or about three hundred in a year, and pumps 1,400 gallons in a minute. Solar heaters are placed on the roofs of houses and connected with water pipes. One heater will supply water for domestic purposes for an ordinary family.

Women as Land Agents.—Two enterprising young women have been engaged by one of the largest railway companies in the western part of the United States as agents for the sale of its lands. They have the distinction of being the only women in the world retained by a railroad land department. They not only sell the land, but they show it. They have for sale more than 50,000,000 acres—quite enough to keep them busy and out of mischief.

AWARDED GOLD MEDAL at WORLD'S FAIR, ST. LOUIS, for BALL-BEARING WASHING MACHINES

COST: Two "1900" and Two "1900" JUNIOR WASHERS—Four Washers, at \$6.62½=\$26.50.

SELLING PRICE: Two "1900" and Two "1900" JUNIOR WASHERS—Four Washers, at \$14.00=\$56.00.

Net Profit Over 100 Per Cent.



FOREIGN MARKETS ONLY. Upon receipt of \$26 50 in U. S. Gold, or its equivalent, we will pack, ready for transportation abroad, and deliver f. o. b. New York, Boston, Philadelphia or Baltimore,

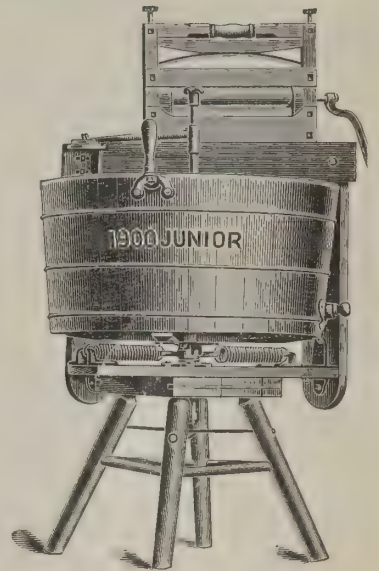
Two "1900" and Two "1900" Junior Ball-Bearing Washing Machines.

Weight of the above four Washing Machines, 250 pounds.

The "1900" Ball-Bearing Washing Machines are the embodiment of the results obtained from over twenty-two years' practical experience in the making of washing machines, and, unlike any other washer upon the market, **do not tear and wear the garment**, but by the adoption of our **agitator** tosses and tumbles the garment through a **whirlpool of water**, thus **forcing the water through the finest or coarsest fabrics**, causing the clothes to become **absolutely clean, without boiling or scrubbing, without wear or tear, and without the use of chemicals.**

Send us \$26.50 for two "1900" and two "1900" Junior Washers TO-DAY. We will ship the washers same day that we receive your order. In acknowledging receipt of your order we will quote your price of washers in car-load lots. You will quickly convert your sample order of four washers into cash, with a profit of over 100 per cent.

THEN YOU WILL ORDER IN CAR-LOAD LOTS. Orders received direct or through export commission houses. When ordering through the latter, please specify "1900" and send us duplicate of order.



The "1900" Washer Company,
BINCHAMTON, NEW YORK, U. S. A.



AMERICAN TIME STAMP.

Marks Time by the Quarter Hour with Ease and Positive Movement. No Clock Work to Get Out of Order. Costs One-Tenth the Amount of a Good Clock Stamp and Does Better Work.

This stamp is used as an ordinary Rubber Hand Stamp. The printing die is mounted on a flexible rubber cushion attached to an aluminum base, making it light, yet strong. To use, simply turn the handle until the desired time is seen on top dial.

Price, with dates and printing die, as illustrated, **\$3.50.**
or with any other wording that may be desired,

A. A. WEEKS, 11 Gold St., New York, U. S. A.
Manufacturer of Glass and Iron Inkstands and Office Stationery.

Send for Catalogue and Export Discounts.

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THE INGERSOLL AMERICAN WATCHES

THE Ingersoll watches as shown here have revolutionized the watch trade of the world. They have established new standards of value. Buyers of watches, in justice to their own interests, must consider this line. Foreign buyers have long been accustomed to purchasing cheap watches, both cheap in name and quality, but we now offer an opportunity to purchase watches guaranteed to keep good time at very low prices.

Our watch factory is the largest in the world devoted solely to manufacture of timepieces. The output is five thousand watches per day, which go to all parts of the world.

PRICES
Yankee, \$7.80 doz.
Eclipse, \$10.20 doz.
Triumph, \$13.20 doz.

F. O. B. New York.

Catalogues and full information, also special discount for quantities, may be obtained through your commission house or direct from us.

One gross of watches packed for export weighs about 50 lbs. and measures 1½ cu. ft.

Send all orders through your commission house and send us copy of same.

Robt. H. Ingersoll & Bro.,
Manufacturers,
67 Cortlandt St., New York City, U.S.A.

WHITE STEAM CARS

AWARDED
GRAND PRIZE
ST. LOUIS EXPOSITION



SIMPLE
SILENT
RELIABLE
DURABLE

EASY TO RUN
EASY TO CARE FOR

Send for Particulars, Post Free

WHITE SEWING MACHINE COMPANY CLEVELAND, OHIO, U.S.A.

The American Salmon Industry.

THE magnitude and value of the salmon industry of the United States of America are the subjects of an interesting special article prepared for a syndicate of American newspapers by William E. Curtis, a noted journalist and traveler. Mr. Curtis states that 10,000 salmon are considered a good day's catch on the Columbia River, in the State of Washington, the fish weighing from eight to sixty pounds each, but that catches of 20,000 are frequent, and that in the fall of 1903 a single gang of men caught 50,000 salmon in one day. As many as 13,000 salmon have been caught in a single fish-wheel in a day, and all the men in charge had to do was to lie in his bunk and listen to the fish falling into his scow. Mr. Curtis saw 30,000 salmon spread out on the floor of a single cannery one day and 40,000 the next day, the fish ranging from five to fifty pounds in weight. That cannery can handle 150,000 fish a day with two shifts, but the men and women can work only so long because their hands get sore. Salmon packers this year are paid \$1.10 per 1,000 cans, and quick-fingered, experienced hands can put up 4,000 cans a day.

The fish-wheel used in catching salmon on the Columbia River does its business like a grain elevator, or a scoop dredge, and actually pumps the fish out of the water. The fish-wheel is usually placed in the rapids of a river, so that there may be as much power as possible to turn it. A dam is built and a wheel from 5 to 15 feet in width and from 10 to 30 feet in diameter, like an ordinary mill-wheel, is located between abutments. To its blades are attached dip-nets made of galvanized iron netting, and as the wheel is placed in the force of the current it revolves continually night and day, according to the force of the water. Every time it revolves it scoops up from one to a dozen of the salmon that are eagerly crowding each other up against the dam in their efforts to go farther on toward the source of the stream. As the wheel turns it dumps its load automatically into chutes on either side, arranged so that the fish will slide by their own weight into flatboats that are waiting for them. These boats will hold 5,000 or 6,000 full-sized fish, and as fast as they are filled they are towed to the cannery. Night and day, from the beginning of the season to the end, there is a struggling mass of fish below the dam, and the remorseless wheel picks them up by the dozen every time it revolves. A wheel at the cascades of the Columbia River has caught more fish than any other. It has been running since 1879, and has earned millions of dollars. There are between thirty and forty similar wheels on the Columbia, with twenty or more scow-wheels, as they are called, built in a similar manner, but attached to big flatboats that can be moved from place to place according as the fish are running. These wheels throw the fish over into the bottom of the scow, from which they are shoveled out into flatboats.

The scows will hold about twelve thousand sockeye salmon each. During the night, while it is cool, the salmon are pitched into conveyors, which carry them up into the cannery automatically and distribute them about the floor of the "butcher-room," which is kept clean by flooding and scrubbing it every night with salt water. The scows are kept fresh in the same way. During a good season as many as 100,000 fish are received at the cannery every night. Indeed, that many must be received if the plant is kept in full operation. The fish are placed upon long tables, where forty Chinamen cut off the fins, heads and tails, and throw the bodies upon an endless rubber belt, which carries them to the cleaning-machines. These machines are curious arrangements, and each one of them will handle an average of about forty-five fish a minute in a most remarkable way. The entire action is automatic. One man sees that the bodies of the fish enter upon their career in a proper manner. The machine does the rest. The fish starts out belly down, tail first. Automatic clamps clutch the tail and press the body upon a sharp knife which slits open the belly; then a series of scrapers and brushes, with a powerful flow of water, cleans it of all the entrails and blood and dumps it into a tank of running water. After soaking a few moments the fish are inspected and placed in large boxes with slatted bottoms to drip until they are thoroughly drained.

Being dry and clean, the fish are placed in pockets on a revolving drum and carried around to a series of rapidly moving circular knives, which divide them into cuts of just the size required to fill the cans being used. Nine sets of these revolving knives are installed across the cannery, and all are frequently running at the same time, some cutting for tall cans, others for one-pound flats, while still others are cutting for half-pound flat cans.

The cuts are now carried to long tables, where they are neatly packed into the proper-sized cans, which have previously received a small amount of salt. This work is performed by tidy young women. Sometimes as many as 250 are employed during the rush season in July and August. The filling is carefully watched by eight trained inspectors. As the cans are filled they are put in wooden trays, carried to washing vats and placed on a belt which conveys them at the rate of 125 a minute into a machine which covers the top tightly with a disk and then rapidly revolves them into a blast of steam. This thoroughly cleans them from small particles of fish or oil, after which the cans are released on a moving belt, which conveys them to the topping-machine. As they are moving along small tin disks are placed upon the fish, so that later, when the tops of the cans are punctured after the first cooking to allow the steam and gas to escape, the fish will not clog up the hole.

As they approach the topper the open cans are seized and carried around horizontally, and at the same time the tops, which have been carried into the machine from the opposite side, are accurately placed on them at the rate of 125 a minute. From the topping-machine the cans are discharged upon a moving belt that carries them through an iron device which tips them over on their sides, and as they roll in between two steel disks the top is tightly crimped

the body of each can. Next a chain conveyor rolls them first through a pan, where just the edge of the can top is moistened with muriatic acid, then through a solder-machine, kept hot by gas jets below, where the top is soldered securely down.

As the cans leave the solder-machine they are automatically tripped back with the top end down upon a rubber belt, which conveys them along a distance of 14 feet while the solder is cooling. As they pass along this belt they touch the finger of a counting-machine and are registered. A spray of cold water gives the solder a set, and the cans then roll down an iron chute into flat iron crates, or "coolers," as they are called. The small vent holes in the centers of the tops are now rapidly soldered by hand and the coolers immersed in hot water to test for leaky cans. The coolers are next loaded upon low iron cars and run into steam boxes, where they are steamed for thirty-five minutes. The cans are then taken out and punctured with a steel point set in a wooden mallet to let vapor and excess of air escape, after which they are immediately soldered up again.

The coolers are now run into iron retorts and exposed to a steam heat of 200 degrees Fahrenheit for one hour, which thoroughly cooks the salmon and softens the bone. The coolers are then taken out and transferred to warehouses, which usually adjoin the cannery. There the cans are again thoroughly washed, placed on the floor a few hours to cool, and then piled up to await the varnish and labeling. The varnishing is done by a new automatic electric motor-driven machine, which carries the cans through a tank of lacquer, after which they are conveyed along on revolving rollers and fanned with forced air from below, which evenly distributes the lacquer and dries it at the same time. Four such machines are used in one cannery, each of which has a capacity of 50,000 cans per day.

Next the cans are labeled as desired by machinery and placed in the already stenciled cases and nailed down ready for shipment. The cases themselves are nailed together at the rate of 2,500 per day in the box factory upstairs.

Automobiles for Military Use.

DURING the maneuvers of the United States Army in the State of Virginia in September last excellent results were obtained with an automobile of special design constructed for the Army Signal Corps. This vehicle, called the "auto-telegraph car," in general design conforms very closely to a standard high-power, long-distance, touring car, with the exception that, instead of the ordinary tonneau, this machine has a tonneau attachment of special design, more roomy than this apartment in the stereotyped style of machine, and with long seats extending along both sides, the occupants of which face one another.

The functions of this new war automobile are somewhat varied. In the main, however, it is designated as an adjunct for what is now the chief work of the United States Signal Corps—namely, the construction, maintenance and operation of temporary or permanent telephone or telegraph lines. Presumably, its greatest usefulness will be found as a moving base of supplies in the erection of telephone or telegraph lines connecting a military post or other headquarters with a force in the field.

The detachment of Signal Corps men, comprising the auto squad for the new car, comprises eight or nine men. In addition to the operator of the machine, there are one or two telegraph and telephone operators, and the remainder of the squad, while capable of doing service as linemen, are attached to the car principally as an armed guard for the operators above mentioned. The latter are also, of course, fully armed and capable of taking care of themselves in a brush with the enemy. The auto squad is now being perfected in a regular drill as distinctive in character as that of the artillery or any other branch of the army.

Another Great American Bridge.

WHAT is said to be the largest bridge contract ever placed with a single firm was awarded to a Pennsylvania steel concern on October 25th.

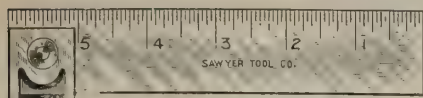
It provides for the construction of the Blackwell's Island Bridge across the East River, at New York, which will be longer and heavier than either of the other two bridges now spanning those waters. The bridge will be 10,270 feet long, containing 100,000,000 pounds of steel, 135 feet high, the material aggregating \$5,000,000. It will have eight miles of trolley tracks and four of elevated roads, foot and driveways. It is considered sufficient to carry 150,000,000 passengers in a year. The entire bridge space would admit 1,000,000 persons.

Magnitude of America's Butter Output.

AT a convention of American butter-makers, held in Agricultural Hall at the St. Louis Exposition, October 25th, the chairman of the association, in giving some figures as to the magnitude of the dairy and creamery interests, said that the production of butter this year in the United States would amount to 1,500,000,000 pounds. The value of this output, exclusive of Sundays and holidays, was, he said, \$1,000,000 daily. To move the year's production of butter would require 43,750 cars, each containing 20,000 pounds. This succession of cars would extend 330 miles, if placed end to end, or from the World's Fair grounds to a point forty miles beyond Chicago. If placed in sections of twenty-five cars, 1,750 locomotives would be required to haul the butter output, and it would take 8,750 trainmen to operate the trains. If sections were placed six miles apart the first section would be whistling in Manila, Philippine Islands, before the last section left the World's Fair grounds.

SAWYER TOOL MANUFACTURING CO.,

MAKERS OF FINE MACHINISTS' TOOLS.



Improved Try Square
With hardened blade. Furnished in ENGLISH,
METRIC and ENGLISH and METRIC graduations.

WE SEND THIS WARRANT WITH ALL PRECISION TOOLS.

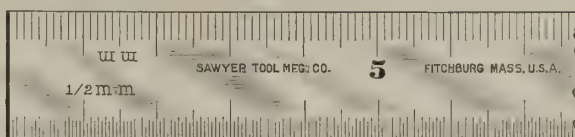
OUR GUARANTEE.

We warrant this tool to be accurate.
Any tool made by us found to be defective
will be cheerfully replaced upon receipt
of the same at our factory.

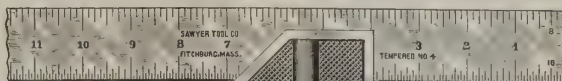
SAWYER TOOL MFG. CO.,
Fitchburg, Mass., U. S. A.

Our fifty-four-page CATALOGUE, illustrating and describing
the various styles and sizes of Fine Machinists' Tools made by
us, mailed postpaid.

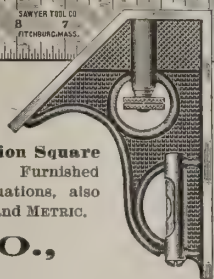
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FITCHBURG, MASS., U. S. A.



Spring Tempered Metric Rules.—These rules are of standard widths
and thicknesses; graduated in millimeters and half millimeters, or when desired
will be furnished in English and metric graduations. All lengths in stock.

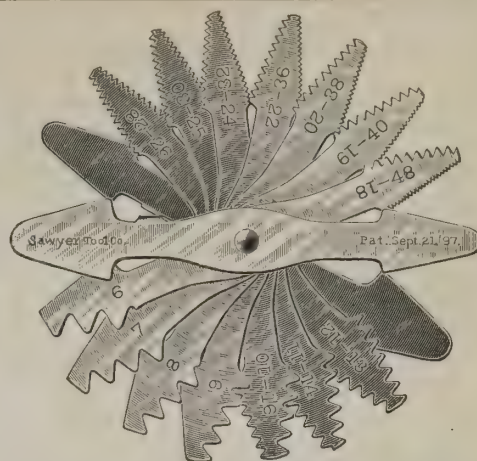


Heavy Combination Square
with hardened blade. Furnished
in all ENGLISH graduations, also
METRIC, and ENGLISH and METRIC.



We have five
styles of
adjustable
squares.

Don't forget our
CATALOGUE.
Send us your ad-
dress; we will do
the rest.



Patent Screw Pitch Gauge—Whitworth Thread.
This gauge has the blades pivoted in the middle with the
pitch cut on the tapered edges of either end.
The shape of the blades of this gauge is such that they can
be used in very small holes. It is compact and has the fol-
lowing pitches; 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24,
25, 26, 28, 30, 32, 36, 38, 40, 48.

**BENTLEY & GERWIG FURNITURE CO.,**

Manufacturers of the

**BEST OFFICE DESKS AND WARDROBES IN THE WORLD
FOR THE MONEY.**

THAT'S ALL WE CLAIM.

Export our specialty. Our patented knock-down device makes it easy to set up our Desks in 10 minutes.

POSITIVELY GUARANTEED TO BE THE BEST DESKS IN THE WORLD.

**Prices range from \$10.50 to \$40.00 on Roll-Top Desks and from \$7.25
to \$17.50 on Flat-Top Desks. Wardrobes from \$5.75 to \$19.00.**

All prices are for goods packed for export. Write for catalogue.

BENTLEY & GERWIG FURNITURE CO.,

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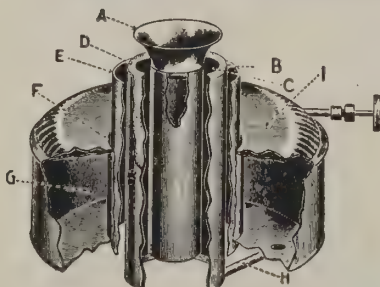
PARKERSBURG, W. VA., U. S. A.**Aluminum Smokeless Oil Heaters. EQUIPPED WITH SAFETY BURNER.**

No. 1—Brass burner; removable fount; 8-in. circular
wick; height (ball down), 23 inches.
No. 2—Brass burner; removable fount; 10-in. circular
wick; height (ball down), 25 inches.
No. 3—Brass burner; removable fount; 15-in. circular
wick; height (ball down), 28 inches.

SPECIAL \$35.00 OFFER

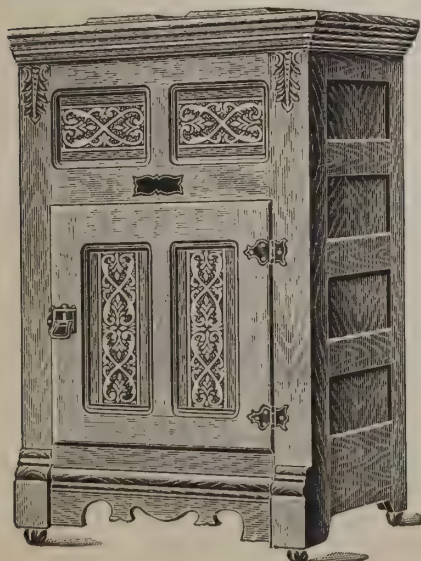
**FOR FOREIGN
MARKETS:**

Upon receipt of \$35.00 in
U. S. gold or its equivalent,
we will wrap and crate ready
for steamer and deliver f. o. b.
New York, 4 of each (12 as-
sorted), No. 1, No. 2 and
No. 3 Aluminum Heaters.
Gross weight, 175 lbs.; net
weight, 130 lbs.; cubic feet,
29 1/2.

OUR SAFETY BURNER. Note Construction.

A—Flame spreader perfectly free from
perforations.
B—Air space outside of wick tube.
C—Air space inside of wick tube.
D—Wick.
E—Outside casing to burner.
F—Air space between fount and outer
casing.
G—Fount or receptacle for oil, entirely
separate from burner.
H—Feed pipe connecting oil from fount
to burner.
I—Shield resting on top of fount with air
space underneath.

Absolutely safe. Explosions impossible.
No perforations about the flame spreader
to become clogged with oily substances.
The only oil heater that radiates heat all over—bottom, sides and top. Only
oil heater with partition in drum to deflect the heat and prevent it going straight
up, and all because of the grand safety burner. No other oil heater has this safety
burner. Order direct or through responsible exporter.

NOVELTY MFG. CO., Jackson, Mich., U. S. A.

Chilkoot Refrigerator No. 0103.

MICHIGAN BARREL CO.,

Grand Rapids, Mich., U. S. A.

MANUFACTURERS OF

HIGH-GRADE REFRIGERATORS.

None but the most skilled mechanics are employed, and none
but the highest grade of material enters into the making of our
refrigerators.

SPECIAL SAMPLE ORDER FOR EXPORT ONLY.**ECONOMIC REFRIGERATOR No. 204.**

Solid Ash; Insulated with Charcoal Sheathing and Mineral Wool;
Patent Adjustable Shelves; Zinc-Lined; Economy in Ice; Perfect
Circulation. Net weight, 155 lbs. Gross weight, 240 lbs. Outside
measurement, 38x19x42 ins.

PRICE, f. o. b. New York, \$13.60.**CHILKOOT REFRIGERATOR No. 0103.**

Made with Hardwood, Golden-Oak Finish; Insulated with
Charcoal Sheathing. Net weight, 135 lbs. Gross weight, 210 lbs.
Outside measurement, 30x20x45 ins.

"The Best Low-Priced Refrigerator on the Market."**PRICE, f. o. b. New York, \$9.40.**

NOTE.—Our catalogue, illustrating and describing the various
styles of REFRIGERATORS made by us, mailed postpaid.



Economic Refrigerator No. 204.

Value of Cement Construction.

AN incidental but highly important lesson taught by the building of the great subway in the city of New York relates to the value of cement construction in masonry. In the original plans for the subway all estimates for masonry work were based almost exclusively on the use of concrete, and the wisdom of that provision is clearly shown in the character and quality of the completed work. George W. Rice, deputy chief engineer of the commission which built the subway, declares that the use of concrete has been beneficial, not only in reducing the cost of the work, but in these times of labor troubles it has allowed the use of unskilled labor in the carrying on of the work, and has, to a large extent, rendered the contractors independent of the bricklayers and other classes of skilled labor. Under competent superintendence the forms can be set and the concrete placed in position with the cheapest kind of labor, and with a certainty of good work if the materials are properly manipulated.

In the construction of some of the tunnels concrete was used exclusively for supporting the surrounding medium, while in other portions of the work, as, for example, the tunnels under the rivers, cast iron and concrete were used in combination. Even the sewers, which, during the course of construction, had to be taken out and rebuilt for varying reasons, were replaced with concrete instead of brick. One noticeable innovation in the use of concrete is its application in the stations where the light is obtained by using concrete reinforced with steel rods and supporting glass cylinders, which light portions of the stations during the day and conversely light up the sidewalk by night by having the light show through from underneath the sidewalks. In fact, the whole of the subway is based on concrete construction, as far as is possible. When it is considered that in the construction of this work, lasting for a term of a little over four years, and that after a very careful inspection no defects in the concrete construction have ever been found, the foresight and correctness of the calculation originally made are manifest, and were evidently based on a proper consideration of the question.

It happened that during the construction of the work a change was made in the plans, whereby the accommodations of a portion of the subway were increased, by making a two-track into a three-track subway at the request of the operating and contracting parties. A small portion of this work had already been constructed along the old lines when the contractor made this request for the change. This necessitated the taking down of a portion of the work, which happened to be a two-track arch span of about twenty-five feet in width. When the work of taking this down was begun the integrity and excellent character of the materials were plainly evident. One very interesting feature in connection with this change was the keeping intact of a portion of the two-track steel concrete subway. This part had been constructed for a short distance when the change was decided upon, and it was found it would be less expensive and more advantageous to cut this two-track subway apart, move the separate portions and build in a portion of the three-track. This was done by severing one side at the top and bottom and moving that part in one direction, while sliding bodily the remaining top and side portion in the opposite direction. This was very ingeniously and successfully accomplished, and shows that a masonry and steel structure which had been constructed properly in the first place, although being mutilated in several parts, can still be utilized.

The amount of concrete which has been constructed under the rapid-transit contracts is very great—in fact, 600,000 cubic yards. It goes without saying that the work has been expedited by the use of concrete and by avoiding the very large amount of brick masonry which otherwise would have been necessary. It is further evident that the work was accomplished at much less cost, and, in all probability, a very much better construction has been secured than would otherwise have been possible, as a better class of work can be obtained with a less amount of supervision. The very fact that the concrete was put in place is sufficient guarantee that the work is well done. In all cases the work has turned out to be of excellent quality, and is sufficiently able to stand any load that may be put upon it. No failure has been noted in any part of the work.

Japanese Studying American Rice Culture.

DR. YOSHISHIGE OTSUKA, Director of the Kiusiu Imperial Agricultural Experiment Station at Kumamoto, Japan, and H. Nukamura, of Tokio, Chief of the Agricultural Section of the Department of Agriculture and Commerce, are making an official study of the methods of rice culture employed in the States of Louisiana and Texas. Their work will include an inquiry as to whether American varieties of rice, as well as American means of cultivating and harvesting the crop, can be profitably introduced into Japan.

—The Smooth-On Manufacturing Company, of Jersey City, N. J., U. S. A., have published a new 100-page catalogue, which they are willing to send free to any one of our readers who will write for the same. This catalogue gives full details of their "Smooth-On" preparations, such as iron cement for repairing blemishes in iron and steel castings, stopping leaks and for making steam and hydraulic connections, also for the prevention and removal of scales in steam boilers. Every mechanical engineer and machinery house should send for one.

Novel Subway in Chicago.

WHILE American interest in the problem of municipal transportation is for the time-being centered in New York's great subway, which is described elsewhere in this issue of THE AMERICAN EXPORTER, a project somewhat similar in character, which is now under way in Chicago, Ill., U. S. A., is bound to enlist earnest attention in business circles. Instead of rushing passengers through subways, leaving the street surfaces to trolley cars and cumbersome trucks and carts, the city of Chicago has built an underground, narrow-gauge railway connected with every downtown business establishment, which will handle the merchandise of the stores, the coal for office buildings, the mail for the post-office, and, it may be, the last editions of the newspapers.

Apart from its purely mechanical aspect, this unique system for intramural transportation, twenty miles of which will be completed by January, and, in the meantime, a portion utilized for delivering coal and carrying away dirt obtained in excavating for new buildings, solves many a municipal problem concerned with conserving alike the commercial and esthetic features of the city. Appealing most to every resident of "dear, dirty Chicago," is its promise to ultimately minimize the smoke nuisance, for it is an astonishing fact that twenty-five railways center in six freight yards within one and one-half square miles in the heart of the business district, the smoke from the engines adding a perpetual per cent. of sootiness to the atmosphere. With the freight handled through the tunnels from outlying freight depots, which the leading railway companies purpose to construct as speedily as possible, the streets will likewise be relieved of the heavily loaded trucks, operated by merchants within this district at an annual cost of \$50,000,000, and moving along in endless procession in the congested thoroughfares at the rate of two or three miles an hour, and of the coal wagon carting the 4,000,000 tons annually consumed in this section. This will leave to the pedestrian better air and more sunlight, render walking on the highway safer, and with the demolishing trucks gone make possible a permanent asphalt street in the business center.

That this freight subway has some Aladdinlike phases may be appreciated by a dive down one of the elevators to the platform 40 feet below the street level. Here one sights the tunnel 6 by 7½ feet underneath the middle of the street, immaculately white with concrete walls and aglow with fifty-two electric lights to the mile. Here awaits a miniature railway train of cog-wheel electric engine and flat cars. The train starts promptly on the subterranean trip underneath the skyscrapers and the Chicago River.

The completed two miles with which the \$60,000,000 corporation has been experimenting satisfactorily for several weeks induced the placing of an order for 150 locomotives and 3,000 steel cars, which, by January, will be able in the twenty miles of the tunnel to carry 50,000 tons of freight daily. The rate of speed will be twenty miles an hour, the trains to be moved according to the block system, the position of every train being shown on a miniature board in a central downtown office and the proper signal for going ahead or stopping given at every corner of the tunnel by the man operating the board. The large firms have readily made contracts for delivering freight, as the tunnel car carries any box passing through the door of the regulation freight car, and for hoisting the merchandise from the tunnel level to their basements they will build elevators of the plunger type. The new buildings going up in this locality, however, are being extended down to the tunnel, providing a sub-basement with tracks like unto a miniature freight yard for the expeditious loading and unloading of cargo while, in the meantime, the dirt obtained in excavating for foundations is removed through the underground passage, thus freeing the streets of the obstructing dirt wagon.

The delivery of packages from retail stores to outlying districts when the company projects the tunnel 100 miles to every section of the metropolis, with capacity of 300,000 tons daily; the speedy carrying of mail, contracts having been made for the daily conveying of 800 tons of downtown mail; the removal of garbage and ashes, and the handling of newspapers and telegrams are numbered among the immediate industrial possibilities of this original intramural freight tunnel.

To facilitate the handling of freight the corporation recently purchased dock property on the Chicago River for \$2,500,000. This land, 400x700 feet, connects with every railroad centering in Chicago. For this so-called terminal and storage plant of the company work is to begin immediately on the largest warehouse ever built for such purposes. The plans include twelve stories, five being below the street level, to provide an adequate underground freight yard for the tunnel.

Practical Test of Fireproof Paint.

AN interesting test of a new form of paint for resisting heat was recently made in the suburbs of New York, U. S. A. Two sheds of light pine were built, and to make the material more inflammable, each building was surrounded with straw. One was painted with what was claimed to be a fireproof compound, and, in addition to the straw scattered around its foundation, contained straw inside. The other shed was not protected. Fire was applied to a heap of straw between the buildings, so that the flames attacked both structures at the same time. Seven minutes after the fire started the unprotected shed was ignited. In twelve minutes its side nearest the fire was ablaze, and in thirty minutes it had collapsed—a mass of ruins. The painted shed was at this time practically unhurt. The straw inside burned, but here also the fireproof paint protected the building, the only effect being to scorch the surface of the boards slightly.



Quality and Price

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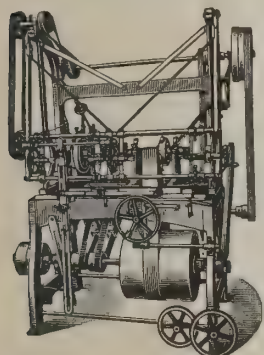
Roller Gearing,
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Lightest to Operate.
Best Construction.

Furnished with detachable legs for export. We also manufacture the "B.B." and "Brammer" Rotaries, also several styles of Lever Washers—round or square. Write us for further particulars.

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The Pioneer Washing Machine
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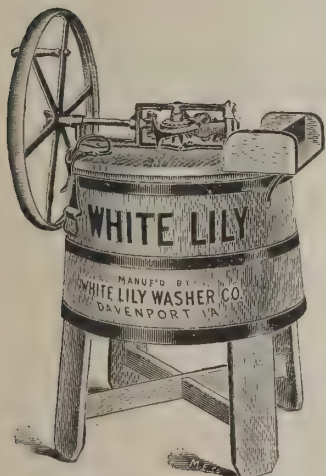
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Catalogue "S" on application.

"The White Lily Washers, Wash Lily White."

Such is the verdict of thousands of users throughout the "States" of the



WHITE LILY WASHER.
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White Lily Washer.

The White Lily (Rotary) Washer is made from Louisiana and Mississippi Red Cypress, which is less susceptible to expansion and contraction caused by hot or cold water than any other timber known. Our hinges are put on with bolts instead of screws, and every part is reinforced wherever necessary, thus making the

Most Durable Washing Machine Made.

By the use of a HIGH-SPEED ROTARY WASHING MACHINE you can create a soap-suds or foam without having to turn the fly-wheel so fast that the SPEED, rather than the work, tires the operator.

The speed of the White Lily Washer is $2\frac{3}{4}$ turns of the fly-wheel to one turn and return of the dasher. The White Lily Washer is the Highest-Speed Rotary Washing Machine made. Will create more soap-suds with less exertion, and will wash clothes cleaner than any other known washing machine.

Special Offer to Introduce Abroad:

Upon receipt of **Thirty dollars** (\$30.00) in U. S. gold or its equivalent we will box, ready for transportation abroad and delivered F. O. B. cars at New York City, **Six (6) White Lily Washing Machines.**

Weight, 600 lbs. Measurements; 18x24x24 inches.

WHITE LILY WASHER CO.,

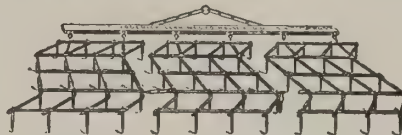
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DAVENPORT, IOWA, U. S. A.

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"In Use Wherever the Sun Shines."



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United States Washing Machine Co.

Successors to INTERNATIONAL MFG. CO.

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Being made of Galvanized Steel is the only washing machine that will not warp, rust or be affected by climatic changes. Absolutely germ-proof and perfectly sanitary.

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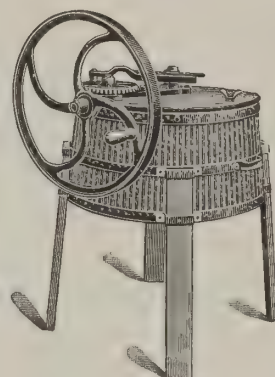
Upon receipt of \$11.00 in U. S. Gold or its equivalent, we will crate (K. D.), ready for transportation abroad, and deliver f.o.b. New York,

2 United States Galvanized Steel Washing Machines.

Each machine occupies six cubic feet, and weighs seventy-two pounds.

Orders received direct or through export commission houses. When ordering through the latter, please specify "UNITED STATES."

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No. 63, Grade 1.

No. 63. 60 inches long; 36 inches wide; 52 inches high; weight, 400 pounds.

No. 64. 66 inches long; 36 inches wide; 52 inches high; weight, 430 pounds.

A VERY handsome swell-front desk. Four letter-file drawers with cast brass label-holder pulls, each drawer supplied with index and our special compressing device; 14 cherry pigeon-hole boxes 11 inches deep, with quarter-sawed-oak fronts; pigeon-hole boxes are trimmed with cast brass label-holders and highly polished cast brass knobs; bracket drawers. Large swell-front center drawer.

Pedestal drawers have handsome cast brass ball and socket pulls. No charge for inkwell set.

Special attention given to filling Export Orders. Send for Illustrated Catalogue and Export Price List. Order direct from factory or through buying and shipping agents, and send us duplicate of orders, so as to avoid mistakes.

Electric Railway Signals.

AN important device for using the main-line current on electric railways for operating any system of electrical signaling has been developed by a practical railroad man residing in New York. In using this plan a "shoe" is carried on the car, and makes contact between the main-line conductor and a section of signal rail or wire, forming a divided circuit, a portion of the current passing through the proper signaling apparatus (which may be in the form of a bell, a semaphore arm, or a series of lights) and then grounding. In the system only a section of signal rail is used. In this case the current operates a solenoid, which, as the car enters a block section, throws the signal arm in position in the daytime and lights a series of lamps at night. As this car leaves the block at the other end, current is caused to flow in a similar magnet, which thus throws the arm or the lights to "Clear." In another method of employing the system the right of way is divided into blocks, the signal wire for each block being insulated from the blocks immediately before and after. In this case, however, it is necessary to have a continuous signal line for the whole distance of a block. This causes a signal lamp to burn, or a semaphore arm to show danger, as long as a car is on the block and a current is flowing through the signal apparatus. To increase further the utility of the system, an annunciator in series with the signal-box may be installed in the despatcher's office, the signal wire grounding at the despatcher's office instead of at the signal-box. The system eliminates the use of local batteries, and, as the current is used from the line operating the cars, almost any form of signal apparatus may be installed.

The American Cheese Industry.

WHILE the United States is a liberal importer of European cheese of the costlier varieties, it also exports enormous quantities of cheese of its own production. According to the census of 1900, there were in the United States 3,200 cheese factories, and the total product, including the cheese made on farms, was about 299,000,000 pounds. New York and Wisconsin are the great cheese-producing States, with half a dozen other States following with much smaller production. Much the greater part of the cheese consumed in the United States is of American manufacture, though the imports were considerable. Last year the United States imported 17,067,714 pounds, of which 6,777,435 pounds came from Switzerland, 6,223,435 pounds from Italy, 1,616,169 pounds from France, 1,134,675 pounds from Holland. From Germany the United States imported 391,518 pounds, and from England only 117,003 pounds. The entire importation of foreign cheese was small, compared with the home manufacture and consumption, and the United States exported more than it imported—viz., 27,203,184 pounds, against 17,067,714 pounds.

New Implements of War.

DISCUSSING various new implements of war, a writer in *Everybody's Magazine* says: "The Herreshoffs of yacht-building fame have invented a torpedo and propelling system which, if successful, does away with the torpedo-boat and reduces the submarine in its possibilities. The business of the torpedo-boat is to convey the torpedo within striking distance of the battleship or cruiser and to discharge the torpedo. The Herreshoffs propose to construct a larger torpedo than the present standardized Whitehead, and to use it just as a small whaleback-boat would be employed. Two men wearing life-preservers set out with it from shore, or from large vessels, and navigate it within striking distance of the enemy's craft, point it, lock the steering-gear, slip off into the water and wait to be picked up. The torpedo thus launched with far better aim than from a tube, and with a longer-carrying range, could scarcely fail to sink its victim. As it is now, the percentage of torpedoes that "arrive" is but one in twelve. If a man can cross the North Atlantic in a 16-foot dory, as has been done more than once, two men should be able to navigate a pneumatically sustained Herreshoff torpedo in some very rough weather.

"An invention which, if the weather be in its favor, is of a more deadly nature than any so far considered, is the dirigible torpedo, controlled by wireless electricity from ship or shore. It is merely the ordinary torpedo, loaded with its big charge of gun-cotton and a firing-pin in the head to explode the torpedo when it strikes; fitted with double rudders, one of horizontal blade to steer up or down, one of vertical to steer right or left; a storage battery for ordinary use and propulsion, a wireless current transmitter and motor for dirigible propulsion, and an elevated tube to discharge a small jet of seawater forced through it by an electrical pump. An observer completely sheltered behind earthworks could send out such a torpedo from shore, make it go miles out to sea, wait for a battleship of the enemy, swim around it, dive under it, and with certainty ram its armored bottom with the firing-pin head. One such station could defend the Sandy Hook entrance to New York harbor if the weather were always good."

New Brush for Washing Cars.—A metal brush which fastens to a pipe or hose and throws a controllable stream of water while in use is a recent American contrivance for washing railway cars. Wooden brushes swell and become worthless in a short time. The metal brush lasts much longer. It is a big task to keep hundreds of car-windows bright, and any invention which saves time and labor in the work is always in demand by up-to-date railway companies.

Ingenious Machines at St. Louis.

HERE is a list made at random of half-a-dozen remarkable mechanical appliances which profoundly impressed an intelligent foreign visitor at the St. Louis Exposition and which he kindly pointed out to an American newspaper reporter: In the great power-house of the Exposition 500 tons of coal are fed to the furnaces every day by automatic stokers, and the ashes are cleaned out of the grates and hoisted and dumped on a waste pile in a similar way. One man does the work of forty. Many of these things are familiar to manufacturers and engineers, but they are entirely new and are highly fascinating to the general public, who never tire in watching them. Years ago everything was carried by hand, but now machines do this work easier and quicker.

There is a large variety of "conveyors," as they are called. There are link belts so arranged that packages can be sent anywhere, not only in a straight line, but round curves and at right angles, up and down stairs, and from one building to another. The economy of labor is remarkable. These contrivances can carry packages of any weight or size, from a paper of pins to a freight car loaded with thirty tons of coal or stone. Iron and coal are shoveled out of mines by automatic machinery. There is a dredging shovel on exhibition which picks up a ton of mud at a bite. A 5,000-ton vessel can be loaded or unloaded in twenty-four hours, and ships can be coaled at sea from colliers half a mile away by automatic conveyors which glide back and forth across the water.

There are machines in the Wonder House which perform miracles. If you feed them well with bars or sheets of iron they will give you any kind of a nail or screw or bolt or steel in any form you want. One of the funniest things is a machine that will make a barrel or a cask while nobody is looking. All one has to do is to furnish the staves and the hoops and it does the rest.

There is an automatic coupler for railway trains in operation which looks as if the problem has finally been solved, so that the thousands of lives and limbs that have been sacrificed to the juggernaut every year will now be saved.

There is a miniature piano factory in operation. It is six stories high, built on a scale of one-half inch to a foot, and filled with tiny machinery which illustrates every operation from the time the lumber is unloaded until the piano is ready for the performer. Minute electric lamps light up the interior and show little puppet workmen engaged at their tasks.

How Farmers Fight Frost.

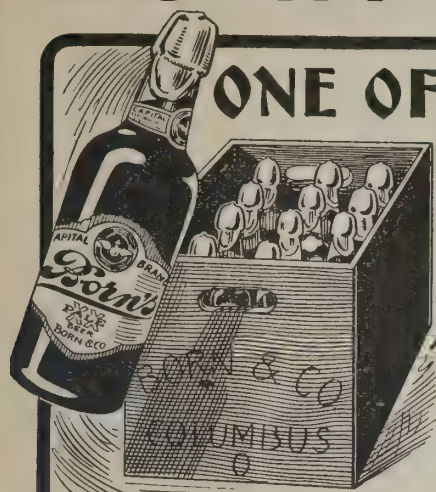
IN many parts of the United States of America, but particularly in the great fruit-growing regions, the farmers use highly ingenious means to prevent the destruction of their crops by frost. In many districts it was formerly a practice to maintain a regular messenger service, that the Weather Bureau's predictions of frost might be promptly carried to farmers and fruit-growers. To-day there are many places where, when frost is predicted, the whistle on a factory in a village sends forth notes of warning over the farming country for miles around. In other localities the news is given by flags placed where they can be seen at considerable distances. More important than these aids to the Weather Bureau, however, are the rural free delivery, the telegraph and the telephone. The telephone in many regions is rapidly supplanting other agencies, and the officials of the telephone companies, whose lines reach to all parts of the country, tell many stories of the way in which the news of the coming of the frost is spread broadcast. In 1903 nearly 30,000 villages and farms received daily forecasts by telephone, and nearly 8,000 had arrangements for receiving special warnings of frost and sudden storm. In that single year the number of places receiving forecasts by telephone increased by nearly 20,000.

While smudge is used for the purpose of creating a cloud of smoke above the surface of the earth and imprisoning the heat which would otherwise be lost by radiation, fires of a different kind are employed to actually raise the temperature in an orchard. Several years ago experiments were tried in California in which oil was used as fuel. It made a hot fire, and was neither expensive nor difficult to manage, but as it covered the trees and fruit with lampblack, the system was not regarded as of great value. Small coal fires, on the other hand, give excellent results, and in the orange groves of California sometimes fifty of them are started in a single acre. This costs about \$4 a night, but as the oranges maturing on the trees in that one patch of ground may be worth \$400, the money spent for the coal fires is really pretty cheap insurance.

Sun Machine at St. Louis.

APYRHILIOPHOR, or sun machine, recently set up in the grounds of the St. Louis Exposition, has generated more than 7,000 degrees of heat (Fahrenheit). Aside from any interesting scientific deductions, which subsequent daily experiments confirmed, the inventor says he has made the following new discoveries: First, the heat of the sun is absolutely of electric origin; second, the intensity of the rays that produce the solar radiation is very much higher than that of the electric arc; third, the sun machine discloses from whence comes the electric energy which holds between the heat of the sun and the stars; fourth, it gives a glimpse of a way to directly transfer the rays of the sun into electric energy.

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XX PALE BEER

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The Absolute Purity and Superior Flavor of Our Beers
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5 doz. pints Born's Muenchner, packed in barrel	\$10.00
5 " " " XX Pale " " " "	net cash, F. O. B., N. Y.

OFFER No. 2.

6 doz. quarts Born's XX Pale, or 6 doz. quarts Born's Muenchner, packed in barrels, \$10.00 net cash, F. O. B., N. Y.
10 doz. pints Born's XX Pale or 10 doz. pints Born's Muenchner, packed in barrels, \$10.00 net cash, F. O. B., N. Y.

OFFER No. 3.

One car lot (130 bbls.), \$9.00 per barrel, F. O. B., N. Y.

We are prepared to ship in any quantity, and earnestly solicit your orders direct to our offices, or through any responsible export merchant. Satisfaction guaranteed.

A. B. FARQUHAR & CO.,

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The Samuel Winslow Skate Mfg. Company, Worcester, Mass., U. S. A.

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Old Features Improved. Many New Features.

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ESSEX'S STANDARD STEAM-ENGINE LUBRICATORS.



Essex "Pilot"
Snap Lever, Sight Feed
Glass Oil Cup.

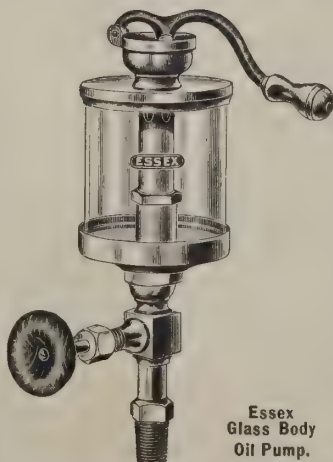
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of Durability and Economy."

Such are the ESSEX LUBRICATORS, having few parts (none complicated), made by skilled mechanics, of the best material obtainable; and each lubricator thoroughly tested before leaving our factory.

OUR 1904 CATALOGUE, illustrating and describing the many styles of LUBRICATORS made by us, mailed postpaid to all parts of the world.

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Ninety per cent. of automobile makers in the United States of America use exclusively the Essex Automobile Lubricators.



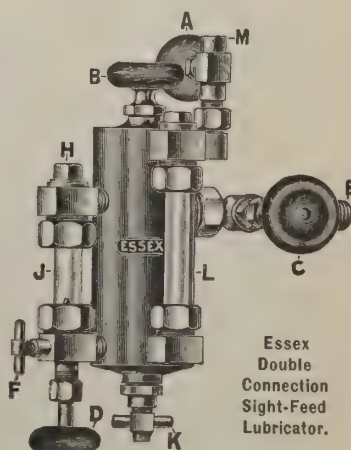
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Specify ESSEX when ordering. Orders received through export houses. When ordering, to prevent delay and error, please mail us duplicate of order.



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Double
Connection
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THE G. B. ESSEX BRASS CO., Manufacturer, DETROIT, MICH., U. S. A.

New Form of Pleasure Boat.

AN exceedingly interesting type of pleasure-boat, which may also serve important utilitarian purposes, has recently been devised by an experienced navigator living in the State of Michigan. In this boat there are not only means for accurately surveying the floor of the stream immediately under the boat, but also for making pictures of the same. The latter will open a new field for the amateur photographer, if the scheme proves entirely practicable. The boat is supplied with a glass bottom, and under the bottom of the craft is an electric light which will illuminate the water and the bed of the stream for some distance around. A hooded reflector makes it possible to sit comfortably in the boat and witness the curious things in the water below with great ease, and pictures may be taken also through means of the mirror. The designer has in his possession a number of photographs which were taken by this means, and these are said to be quite satisfactory, although they were made in the early spring, when the water was clouded with dirt washed down into it. These boats will be used during the summer season. Boats somewhat similar to this have long been used in the States of Florida and California.

Boats of the type described should prove exceedingly useful to fishermen on inland rivers and creeks where spearing fish at night with the aid of torches is an old and popular sport. Glass-bottomed craft should also prove of great value in exploring the beds of lakes and streams and in making surveys for the construction of wharves, piers and other public works.

An American Wonderland.

THERE is in the State of Colorado a railroad connecting the tourist center of Colorado Springs with the world's greatest gold camp of the Cripple Creek district, which for grandeur of scenery and marvelous engineering achievement excels anything in this country or Europe. It is the Colorado Springs and Cripple Creek District Railway, better known as "The Short Line," opened for traffic in 1901, since which time its fame as a line of unparalleled scenic attraction and wonderful construction has spread to all parts of the world.

The air-line from Colorado Springs to Cripple Creek is nineteen miles, but this famous railroad, in its ascent of the mountains, twisting and turning around the edges and over the tops of gorgeous cañons, traverses a distance of forty-five miles, and from start to finish presents a continuous panorama of stupendous and bewildering mountain and cañon scenery, which baffles all description. It was a well-known writer, who, after exhausting his entire vocabulary of adjectives before reaching the awe-inspiring Point Sublime, six miles out, declared in desperation that it was "the one-day trip that bankrupts the English language."

Unlike other mountain railroads, The Short Line winds around the rims and over the tops of the cañons, instead of following the stream levels, thus affording a comprehensive view of the indescribable glories of North and South Cheyenne Cañons from the top.

It is universally pronounced the feature of a Western tour, and no traveler to the Pacific Coast would think of passing through Colorado Springs without making the side trip to Cripple Creek over this wonderful railroad, including an inspection of the fascinating gold camp on electric trolley cars. Palace observation cars are run on all trains, which afford the tourist every facility for viewing the incomparable scenery and the best-built railroad in the West.

The time consumed in making the trip is two hours and a half in each direction.

Anglo-Russian War Cloud Dispelled.

AS a result of a serious and inexplicable attack by the Russian fleet on the British North Sea fishing fleet on the night of October 21-22, there was for a few days following imminent danger of war between Great Britain and Russia. Happily, however, the peril was averted by the joint agreement of the two nations to submit the whole affair to an international court of inquiry to be appointed in accordance with a provision adopted by The Hague Conference of 1899. For a clear and impartial view of this unfortunate entanglement the following, from the New York *Sun*, will be highly useful:

"The assurances given by Premier Balfour in the speech made at Southampton on October 28th prove conclusively what should indeed have been self-evident, that responsible statesmen would not permit a war to grow out of the outrage committed in the North Sea on October 21-22 by vessels belonging to Admiral Rojestvensky's fleet. The only danger was that the Grand Ducal cabal which controls the Russian Admiralty might, in ignorance of the pressure exerted by public opinion in free countries, delay so long to promise to investigate and punish an offence against the law of nations that the Balfour Government, in order to allay the rising storm of indignation in Great Britain, might have felt constrained to take some measures for the interception and temporary detention of the Russian warships. In that event a collision might have been unavoidable.

"There never was any foundation for certain theories which for a time found currency in some London newspapers; such as the assumption that the breach of international law, committed when the English fishing-boats were fired upon, was deliberately planned in order to draw England into the war and thus afford the St. Petersburg Government a pretext for saying that, yielding to superior force, it would no longer reject the mediation of a friendly Power. For the provocation needed to drive England into a war, a single torpedo-boat would have sufficed. It would have been superfluous

to sacrifice for the purpose the whole of Russia's remaining sea power. Equally far-fetched is the hypothesis that the violation of neutral rights in the North Sea was prompted by the hope that the neutral Powers would thus be aggravated into taking concerted steps to compel the return of the Russian fleet to the Baltic. No sense of duty or of honor constrained the Russian Admiralty to despatch that fleet to the Far East at a time when it would be scarcely possible to reach Vladivostok before the middle of January. Disinterested naval experts would have approved of the decision to postpone the departure of the warships until next spring.

"All the evidence thus far obtainable indicates that the officers of the Baltic fleet were apprehensive of being attacked by Japanese torpedo-boats more or less disguised. It appears that alarming rumors were current in the Baltic ports, and that the most stringent precautions were taken by the Copenhagen Government for the protection of the Russian vessels while these were in Danish waters. Moreover, the English fishing-craft were not the only victims of the trepidation, not to say panic, produced among the Russian naval officers by the reports to which we have referred. At least one merchant steamer, flying the Swedish flag, had previously been fired upon. Under the circumstances it is conceivable that the officer commanding the detachment which did the firing may have misinterpreted the rockets sent up by the flag vessel of the trawler fleet, or may even have mistaken one or more Russian torpedo-boats for enemies. We repeat that such a blunder, though indefensible, would not be inconceivable, because not unprecedented.

"From the moment, at all events, that a naval commander of high reputation like Admiral Rojestvensky positively asserts, as he does in his official report, that during the night of October 21-22 the Baltic fleet *was* attacked by two torpedo-boats, which, in self-defense, were fired upon, it is obvious that the Russian Government cannot be expected to accept without investigation the British version of the affair. The case evidently is one for impartial inquiry at the hands of arbitrators, and the parties concerned have very properly agreed to submit it to an international commission to be appointed under a provision of The Hague convention.

"All's well that ends well. This deplorable incident, which at one time, in the eyes of thoughtless persons, portended immediate war, seems likely to advance materially the cause of peace by increasing signally the prestige of The Hague Tribunal."

Ostrich Farming in America.

AFTER more than twenty years of harsh experience, involving money losses exceeding \$2,000,000, ostrich-farming in the State of California has at last become a stable and prosperous industry. One ostrich ranch, formerly conducted at an annual loss of \$15,000, is now earning \$20,000 a year, and another returned profits of \$45,000 on last year's operations.

Ostrich-farming is unusually prosperous these days. All the southern California ostrich farms that were losing money steadily a few years ago have doubled and trebled their number of ostriches and increased their land holdings. Some \$700,000 is now invested in ostrich-farming in this region, and the annual output of feathers has grown to be over \$100,000.

The success of California ostrich-farming has come largely from an invention of an ostrich incubator by a young woman in 1894. In ostrich domestic economy the male sits upon the nest of eggs laid in the sand, occasionally relieved by the female. In the hot Nubian deserts this plan works admirably, but on a little farm in the colder climate of California, where the birds flock together, the sitter has so much to detract it from the nest that the eggs are frequently allowed to get cold at night. Therefore, a whole annual setting has often been lost. The incubators have remedied all this, and now the percentage of loss by infertile eggs is less than 10 per cent.

The best ostriches for plumes come from Nubia. The California farms now have a new home-bred ostrich that it is believed will be the finest plume-producer ever known. The first ostriches in America were brought from Cape Town in 1882. There were thirty-four in the flock when they were shipped. Eleven died at sea, and all but six died here a year after they arrived. The pioneer in the California ostrich-farming lost \$30,000 in that investment.

But he started back to Cape Town for another flock. With these he had better luck, but while he was learning how to adapt South African ostrich-farming to California and trying to grow marketable feathers, he lost from \$6,000 to \$8,000 annually for several years. A dozen men were ruined by ostrich-farming in this region in those experimental days, but now all is changed. The ostrich farmers are making large profits.

New Design of Swing Saw.

RECENT American inventions of wood-working machinery include an improved swing saw, which combines the qualities of strength, simplicity and accuracy of work. The frame is cast in one piece, cored and designed to secure the utmost rigidity and exactness and alignment. The adjustable counterbalance may be applied to either side of the frame; when the frame is brought forward this counterbalance carries it back into position after the cut is made. The guard accommodates saws up to 24 inches diameter, and is provided with a handle for pulling the saw forward. The saw arbor is grooved to prevent end motion.

Exports of Sewing Machines.—The exports of American sewing-machines in all ports for the first seven months of 1904 amounted to \$3,357,115, as against \$3,148,297 for the corresponding period of 1903.

Electric Novelties at the World's Fair.

WIRELESS telephones are extensively used among the various buildings and sections of the St. Louis Exposition. They accord a means of secret communication which cannot be interrupted. With the receiver and transmitter of one of these telephones in his possession a person can pass through a crowd, meanwhile sending or receiving messages to or from points within a wide radius without the possibility of interference.

Among the exhibits are electric locomotives which claim a regular speed of more than one hundred miles an hour, and telegraph instruments upon which can be sent from 1,000 to 2,000 words a minute. There are other instruments for sending pictures and handwriting by telegraph, and there are also telephones and phonographs combined, by which one can have recorded on a wax cylinder the messages sent him when he is away. There are electric motors and generators, some of the motors so small they are just fit to run a sewing-machine, and some generators so large that they do the work of 10,000 horses. There are all kinds of storage batteries, some for use in country houses and others adapted to automobiles.

No less interesting are the electric cooking-utensils. A very important thing about cooking and heating by electricity is that it is much more healthy than cooking or heating by coal or gas. Electricity makes less dirt, and the apparatus can be quickly and readily cleaned. Again, you can heat any desired vessel without heating up the rest of your surroundings. You can make coffee without bringing the room to a high temperature, as you must do if you would heat a smaller quantity of water by coal, wood or gas. By the electrical apparatus all the heat is kept inside the coffee-pot and the room at a comfortable temperature. As to the use of electrical heating apparatus in the household, it is safe to say that it is constantly encroaching upon the more primitive methods. Electrical heating and electrical cooking are far superior to any other in the matter of convenience. Wherever water must be heated it can be heated as economically by the electrical apparatus as by gas or coal, and such cooking and heating can be more easily done than by any other means.

One of the most interesting features of the Palace of Electricity is an electrical apparatus by which the deaf are made to hear. Classes of deaf mutes come here and are thus taught to speak, and through this apparatus their education can be carried on. Indeed, it is believed that it will soon be in general use throughout the United States, and that it will do much to better the condition of the so-called deaf and dumb.

American Progress in the Philippines.

NOT least among the results of American influence in the Philippine Islands are those accomplished by medical science for the protection of life and health. The laboratories established by the American authorities are working wonders among the natives.

The demand for vaccine virus has been very great since the American occupation, for until the advent of the Americans no systematic effort had ever been made to vaccinate the people of the islands, and smallpox was always present. A large number of calves were purchased for the purpose of preparing the virus; nearly every one has been properly vaccinated, and smallpox cases are very rare.

A plague prophylactic has also been supplied in sufficient quantities, and its intelligent employment has reduced the plague cases to such a degree that the islands are now practically free from this dread disease.

The struggle waged against rinderpest, which threatened all the draught animals on the islands, was eminently successful, and there is now a herd of seventy-five animals kept for the express purpose of furnishing a serum with which to inoculate non-immune herds.

Oriental coals are deficient in gas-producing qualities; importations from Europe or America would be entirely too expensive for the purpose—gasoline, even, was found to be unsatisfactory.

Nothing daunted, the chemists experimented successfully, and finally adopted the plan of preparing gas from cocoanut oil—a native product. Strong cast-iron retorts are brought to a red heat in furnaces, and the cocoanut oil is then slowly fed into them, thus producing a very high quality of illuminating gas, free from smoke and tar.

These examples will perhaps suffice to show the important work already accomplished through these laboratories. In general, it is interesting to know that provision has been made for housing the branches of chemistry, bacteriology, pathology, botany and entomology, and for preparing prophylactic and curative serums.

It may be mentioned that the biological laboratory is investigating human diseases, and has in preparation a work on a method of protective inoculation against Asiatic cholera and amoebic dysentery. Fifteen bulletins have already been published on medical, veterinary and botanical subjects, some of which have excited wide attention.

Vehicles Capable of Varied Uses.

IN Pittsburg, Pa., U. S. A., there are in use four big Colonial omnibuses for transferring passengers and baggage. Each of the cars accommodate fifteen passengers comfortably, and has two folding side racks, which can be let down for carrying luggage, and a folding rack in front for mail-pouches.

Exports of American Manufactures.

MANUFACTURES formed a larger share and agricultural products a smaller share of the exports of the United States in 1904 than in any earlier year. Figures issued by the Department of Commerce and Labor, through its Bureau of Statistics, covering the foreign commerce for the nine months ending with September, show that 37.87 per cent. of the exports during that period were manufactures and but 52.04 per cent. agricultural products. Comparing these figures with those of earlier years, it may be said that on only two occasions—in the fiscal years 1900 and 1904—have the exports of manufactures formed as much as 30 per cent. of the total exports.

In 1900 they formed 31.65 per cent., and in the fiscal year 1904, 31.52 per cent., but in no other fiscal year have they formed as much as 30 per cent. of the total, and at no time have they for a period of any considerable length formed as large a proportion of the exports as has been the case in the nine months ending with September, 1904. The total value of manufactures exported during the nine months ending with September, 1904, is \$365,000,000, against \$311,000,000, in the corresponding months of 1903, \$338,000,000 in the same months of 1900, \$145,000,000 in the corresponding months of 1895, and \$113,000,000 in the corresponding months of 1890. For the single month of September the exports of manufactures were \$42,690,501, against \$33,244,848 in September of last year.

Agricultural products exported in the nine months of 1904 amounted to \$502,417,678, against \$566,282,378 in the corresponding period of 1903, though in the single month of September the value of agricultural products exported slightly exceeded that of the corresponding month of the preceding year, being in September, 1904, \$78,194,486, against \$64,185,433 in September, 1903. This increase in the value of agricultural products exported in September, 1904, as compared with September, 1903, is principally due to the exceptionally large exports of cotton in September, which were much above the average of September exportations in earlier years.

The share which manufactures form of the exports seems likely in the calendar year 1904 to be greater, and the share which agricultural products form of the total exports seems likely to be smaller, than that of any preceding year. In the nine months ending with September, 1904, manufactures formed 37.87 per cent. of the total exports; in 1903, they formed 33.2 per cent.; in 1900, 33.44 per cent.; in 1895, 20.68 per cent., and in 1890, 20.21 per cent. of the total exports. The above figures relate in all cases to the nine months' periods ending with September. On the other hand, products of agriculture form a much less percentage of the total exports in 1904 than in any earlier year, being in the nine months but 52.04 per cent., while in the nine months ending with September, 1890, they formed 71.84 per cent. of the total exports of domestic products.

Turning to the import side, materials in a crude condition which enter into the various processes of domestic industry amounted in the nine months ending with September to \$248,000,000 and formed 33.03 per cent. of the total imports, as against a total of \$245,000,000, forming 32.37 per cent. of the total in the corresponding period of last year. The steady growth which manufacturers' raw materials are making in the imports of the country is shown by a comparison of the imports of materials of this class in the nine months ending with September, 1904, with those of the nine months ending with September, 1895. In the nine months' period ending with September, 1895, articles in a crude condition for use in the domestic industries showed importations amounting to \$160,591,676 and formed 26.72 per cent. of the total imports, while in the nine months ending with September, 1904, the importations of this class of articles amounted to \$248,155,287 and formed 33.03 per cent. of the total imports.

Windmill Automobile.

PERHAPS the most novel of American traction vehicles is a windmill automobile now in use on the farm of the builder in the State of South Dakota, U. S. A. The frame on which the windmill tower is built is a triangle, the center beam being 2 by 6 and 12 feet long, resting on the guide-wheels at the front and on the axle at the rear. Two 2 by 4's extend from this beam at about half the distance to the outside of the rear. Ten inches in front of the axle is another 2 by 6, extending crosswise and resting on the beam and side bars, thereby forming a triangle that will not rock. Two legs of the tower rest on each beam.

The wheel is an 8-foot steel pumper, remodeled into a geared mill by using some old gear. The windmill is all built of old gear, and it was quite a task to find the right sizes and kinds. At first the vane was used, but as this would not hold the wheel in the wind when it was pulling hard, the gear was attached in such a manner that now the wheel can be regulated with the left hand and the speed also. There are times when both hands are needed, and so a screw is used for a steering device and it will stay where it is set.

This machine runs best against the wind. Of course, it will move sidewise to the wind or with it, but always the best against it. In a good wind it will move about three miles an hour and it could be made to run faster. The machine is 12 feet long, 9 feet wide and 12 feet high, weighing about 800 pounds.

A Valuable Tree.—Included in the exhibit of the State of North Carolina, U. S. A., at the St. Louis Exposition, is a cross section of a famous black walnut log 54 inches in diameter, which, when cut into veneer, produced 8,000 feet of beautifully figured stock.

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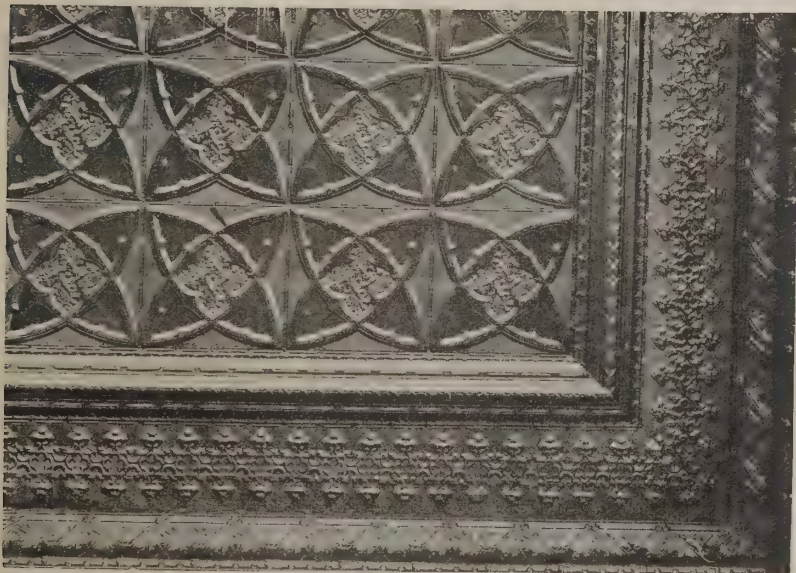
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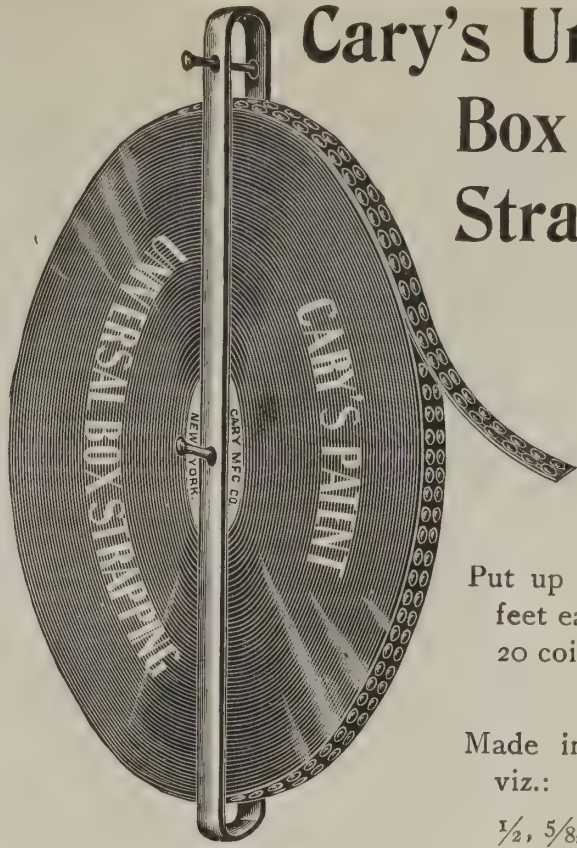
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Deepest Mine in the World.

THE deepest mine in the world is the Calumet and Hecla copper mine on the shores of Lake Superior, U. S. A., beneath which it reaches downward 4,000 feet. If the knife of a Cyclops could cut the honeycomb in two, longitudinally, as Sir John Lubbock used to cut an ant's nest for the purpose of observing what was going on inside, there would be revealed a wealth and a breadth of industry not eclipsed by those of many surface communities. Dozens of elevator shafts, some perpendicular, others on an incline, would be found piercing the comb from top to bottom. In them would be seen cars carrying men and metal up and down with the speed of express trains.

In and out, across and back extend galleries overflowing with activity; in some, lines of air-drills, eating their way into the rock, in others the sudden bursting of blasts in the walls of the lodes. Electric locomotives are hauling trains of rock cars to the shafts, or men are found laboriously pushing hand-cars through darkened subways. Down some of the shafts can be traced pump lines, pipes and cables radiating outward through the galleries, so that the miners may have dry tunnels, electric lights, and even telephone service underground.

In these passages, many of them so deep that the internal heat of the earth can be perceptibly felt, men live and eat and toil and carry on the business of life apparently oblivious of the fact that they are nearer the center of the earth than ever man succeeded in getting before, and are digging themselves nearer every minute. Thousands of men inhabit these towns and villages underground, governed by laws for their peaceful regulation, and provided with efficient systems of fire protection, sanitation, drainage and ventilation.

In the deepest mine there are over two hundred miles of tunnels lighted in part with incandescent lamps and a complete telephone service with a "central" and eighty instruments installed in the galleries, so that the pumpmen on the fifty-seventh level can call up a friend over the long-distance wire to Chicago and tell him how it feels to live in the bowels of the earth.

America's Next Exposition.

THE next great exposition in the United States will be the Lewis and Clark Exposition, to be held in the city of Portland, Ore., beginning June 1, 1905. Compared with St. Louis, the Portland Exposition will be a miniature, but it will equal those of Buffalo, Omaha, Nashville, Atlanta and Charleston. It is to be a million-dollar exposition. Five hundred thousand dollars has been contributed by the State and \$500,000 by citizens of Portland of every class and quality. There are more than three thousand stockholders. Half a million will be spent in buildings, about \$350,000 in the improvements of the grounds and the remainder will be working capital. The Government of the United States has made a very liberal appropriation, and all of the Northwestern and Pacific States are taking an active and generous interest in the enterprise.

The site of the exposition is about two miles from the city—twelve minutes by trolley cars from the center of things. The fence incloses 185 acres of land and 350 acres of water—a lake with an island which furnishes a key of the landscape scheme. Surrounding the lake is a group of low hills, the foothills of the mountain range that embraces Portland, and upon them the buildings will be placed. It is a superb location.

America's Great Horse Market.

THE city of New York contains the greatest horse market in the western hemisphere. Horses worth millions of dollars have been bought and sold privately and by auction in its handsomely appointed show-ring, and its balconies have held many fashionable assemblages on the occasions of the great sales. The Horse Exchange is the property of a corporation, but all sales held there are conducted by one auctioneer, who pays heavily for the privilege. His business is the largest of its kind in the world, nearly every prominent shipper of fashionable carriage and saddle horses in the United States and Canada consigning his stock to the auctioneer when intended for public sale in New York. All the market records have been made at these sales—a four-in-hand for \$10,750, a pair for \$10,200, a single high-stepper for \$7,800, and for a consignment of forty-four trotting-bred carriage horses an average of \$1,494 each.

While the auctioneer conducts all of the auctions held at the Horse Exchange, many other dealers make their headquarters there, disposing of their horses at private sale. From these the manager of the exchange merely collects a certain uniform charge per day for the board of each horse, the payment of the charge for keep carrying with it the right to show and sell in the ring and all other facilities of the exchange.

There is stable room for about five hundred horses at the exchange. During the busy season the usual accommodations for horses are often overtaxed, making it necessary to put up temporary stalls around two sides of the arena.

Worthless Life Preservers.

NEW YORK'S Board of Trade and Transportation has formally condemned life-preservers made of kapoc and tule rushes, and the statement was made that they are so inflammable no steamer should be permitted to carry them. Ground cork for the same purpose was also condemned, and the regulations in force in the United States Navy were recommended

for adoption by all vessels of the merchant marine. A life-preserver full of stuff that will blaze up fiercely while it is strapped on one's body is a "preserver" indeed. Why were we not told of the character of kapoc and tule rushes by the "efficient inspectors?" Who is to be the judge of public safety—a man or men so sodden with either liquor or avarice as to be incompetent, or decent men doing their duty properly? Enough has been had of inspectorial incompetency, and the discovery that the life-preservers already proved inadequate are also highly inflammable is merely one more good and sufficient reason for a thorough "shake-up for the good of the service."

The American Livestock Industry.

THE average reader has only a vague, general notion of the magnitude of the livestock industry of the United States. A brief essay in comparative statistics may broaden his understanding. If shown by official Government count that the horses, mules, cattle, hogs, sheep and goats in the United States number over 220,000,000 head, and that their value is, according to the same authority, over \$3,200,000,000 (see twelfth census of the United States), the figures alone would have very little attraction or meaning to the majority of readers. But when told, in addition thereto, that these animals would make a solid column of more than eighty-nine abreast, reaching from San Francisco to Boston, or if placed in single file a solid procession that would reach nearly ten times around the earth, and further, that their value exceeds the total combined value of all the corn, wheat and other cereals, potatoes, hay, cotton, sugar, molasses, tobacco, lumber, wool, coal, petroleum, silver, gold and precious stones, iron, copper, lead, zinc and other metals produced annually in the whole country, then perhaps some adequate conception may be formed concerning the magnitude and importance of the livestock industry of the United States.

Largest Cut-Glass Vase.

WHAT is believed to be the largest cut-glass vase in the world has recently been completed by a firm in Philadelphia, Pa., U. S. A., and placed on exhibition at the St. Louis Exposition. The vase is 5 feet 7 1/4 inches in height and every inch of it is perfectly worked in sunbursts, chrysanthemums and beaded and notched effects that shed prismatic rays of brilliance and luster. The sunbursts on the star are too large to be designated by that usual cut-glass term, so they have been given a new name, the Louisiana Purchase Star. In all there are 100,000 cuts or deep incisions on the vase, which required turning it 200,000 times. The vase weighs 200 pounds. It was produced by nine men, who spent 2,000 working hours on it. The man who made the blank is 6 feet 7 inches tall. A shorter man could not have handled the great piece of glass. Twenty blanks were turned out before a perfect one was produced. The remarkable brilliancy of the vase is caused by the fusing in the glass of 10 per cent. more lead than is ordinarily used. The vase is several times larger than the previous greatest piece of cut glass, completely dwarfing it.—*Philadelphia Press*.

Splendid American Telescope.—Harvard University, Cambridge, Mass., U. S. A., has recently placed in its observatory the largest operative telescope in the world. This instrument, the gift of an anonymous friend, is described as the "most potent light collector ever yet turned to the skies." The mirror alone weighs more than 2,000 pounds, and the telescope tube itself rises to a height of twenty-seven feet.

Corset Shoes for Children.—What are called corset shoes for children's wear are among the novelties recently introduced by an American manufacturer. Pliable whalebone braces are inserted in grooves on the sides, and may be adjusted to any foot. The purpose of these stays is to preserve a proper angle, thus allowing of a natural, straight and perfect shape. It is said that by use of the corset shoe bow legs, weak ankles and strained muscles and tendons are made impossible.

Natural Woods of Any Color.—The desire to imitate is too strong in the human mind to overcome. As an example, we are now in for a craze at staining various woods for finish, when we can get almost any color we want from natural woods.—*The Wood-Worker*.

America's Longest Pier.—When the last 100-foot crib forming the foundation of the new Government pier at South Chicago, Ill., U. S. A., was put in place in Lake Michigan, a few weeks ago, the outpost was established for what, when completed, will be the longest pier in the world. This pier, from shore to the farthest limit for loading and unloading ships, will be 6,900 feet in length.

Fifth-Wheeled Wagon Gear.—An American inventor has designed a wagon-gearing with two fifth wheels, permitting very short turns of the vehicle and preventing it from being overturned in case of a runaway or accident. One of these is in the usual place on the front axle and the other is on the rear axle, with a tooth-gear connection, so that when the front wheels are turned the rear ones will be inclined in the opposite direction.

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All goods bearing the name of Thomas A. Edison are everywhere recognized as the best of their kind. For that reason Edison Phonographs and Records, Edison Kinetoscopes and Films, Edison Primary Batteries and Fan Motor Outfits, Bates and Edison Hand Numbering Machines (both of the latter being made at the Edison Laboratory) are desirable lines for dealers in all parts of the world to carry.

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"The Most Popular Bracket Made."

We have made nothing but this Steel Wire Shelf Bracket during the past eleven years. We have learned how to make it, and are willing to sell it low. That is why our output is close on to 11,000 Brackets each day.

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ATLAS MANUFACTURING CO., New Haven, Conn., U. S. A.

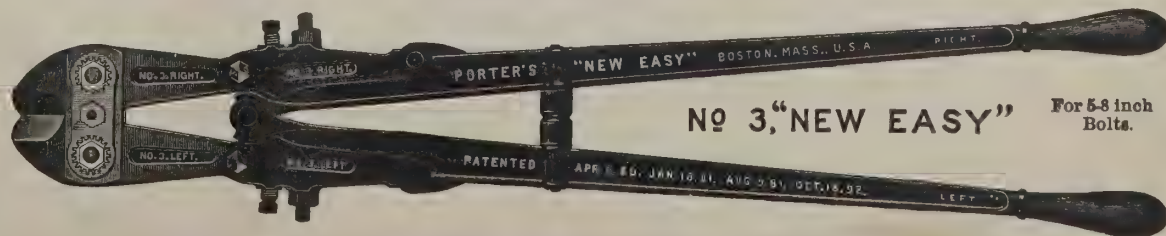
**The "NEW EASY"
BOLT CLIPPER**

IS THE BEST.

MANUFACTURED BY

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**TO INTRODUCE ABROAD.**

Upon receipt of Twenty-seven Dollars and Twenty-seven Cents (\$27.27) in U. S. gold, or its equivalent, we will box and deliver f. o. b. cars at New York City Our Special Offer as follows:

BRADLEY BRACKET ASSORTMENT No. 3.

5 Dozen Pairs.....4 x 5	7 1/2 Dozen Pairs..... 7 x 9
12 " ".....5 x 7	2 1/2 " "..... 8 x 10
12 " ".....6 x 8	1 " ".....10 x 12

Weight, boxed ready for steamer, 200 pounds.
Size of case, 42x23x18 inches.

Machine for Counting Coin.

AN ingenious application of electricity to labor-saving devices appears in a machine for counting coin, now in use in American establishments in which large amounts of metallic currency are handled. The object of the device is to facilitate the rapid and accurate counting and bundling of coins of all descriptions, from pennies to dollars, since there are many lines of business which necessitate the employment of a large staff of clerks whose sole duty heretofore has been the performance of this laborious task. The machine counts and wraps coins at the rate of seven every second, or 420 coins every minute, and does this continuously as long as the motor runs and coins are fed into the hopper. The coins are wrapped compactly at the rate of from eight to twelve bundles per minute, according to the size of the coins. Since an expert is only enabled to count and wrap fifty coins a minute manually, it will be seen that the machine will do at least as much work as eight men. It is true that each machine requires an operator, whose work consists of a mere cursory examination of the coins. The speed of the machine is limited only by the ability of the operator to detect the spurious coins.

When the machine is in operation the coins are laid upon a table to facilitate examination, when they are dropped into a hopper, whence they slide through a conduit down into the active mechanism, where they are pushed into a row. When the last coin has been forced into its place by a reciprocating push-bar the coins are automatically transferred from a buncher to the wrapper while a new row is being brought into position. As the coins reach the wrapper a roll of paper is fed by three driving rolls placed around the bundle of coins. By a rolling motion the paper is wrapped around the coins twice, when it is cut off by a V-shaped knife. The next and finishing process is turning in the projecting edges of the wrapper, which is done by means of crimpers, drawing the edges in opposite directions, and finally turning out a smoothly rolled package held firmly in place without the use of paste.

Successful Test of an Airship.

HIGHLY successful tests of an airship, designed by Thomas S. Baldwin, of California, were made at the St. Louis Exposition on October 31st.

In charge of a single operator, the airship rose to an altitude of 2,000 feet, where it remained more than an hour against the wind, ascending or descending at the will of the man at the helm, and finally landing within 200 feet of the point from which it started. There was not a moment when the ship was not under the full control of the operator. The mechanical part of the air ship worked perfectly. The gasoline motor did not miss an ignition, and the revolutions of the propeller were steady and powerful.

Photography in Fire Insurance.

IMMEDIATELY after a fire of any serious magnitude in the United States of America nowadays there will be found on the scene expert photographers representing the companies carrying risks on the property destroyed. These men are there for business. Their cameras make uncontested records as to the amount of visible destruction. It is no exaggeration to say that every recent important deduction by insurance engineers in the case of fire-swept places is based upon personal observations made into permanent records by photographs taken on the spot by students of fires. Nothing equals photographic details when close investigations are to be made for insurance purposes, whether before or after a loss.

Not long ago, in a prominent Western city of the United States, public opinion ran high against fire-insurance companies because their rates were alleged to be unjustifiably high. Pictures were taken showing the combustible conditions in the rears of business buildings, alleys, etc. A record was made of inflammable accumulations which no one could dispute; photographs of block after block showed a serious conflagration menace in wooden buildings, wooden awnings, etc. The result was a reform in local safeguards against fire which enabled insurance companies and property-owners to do business on a mutually satisfactory basis.

Casualty insurance companies which issue employers' liability policies are relatively almost as great users of cameras as the fire-insurance people. Unsafe conditions of factories, mills and workshops, by which the lives or limbs of workmen are jeopardized, are duly recorded in photographs. Probably no other single instrument brings about so many reforms and corrections, in the interest of public safety, as the underwriters' camera. The photographs of dangerous defects lead to early corrections in the majority of cases. But it is in fire insurance that the camera is in greatest demand. There it turns out with the fire-engines and remains in service after the fire-extinguishing apparatus and the fire-insurance patrol have gone home.

Windmills for Electric Power.—Using the wind to generate electricity for farm use is no longer a novelty. The first of these windmills were used experimentally to generate electricity for lighting houses and barns. Success has since stimulated attempts to use them for more ambitious projects. To-day a good many are being run to generate power to operate small motors. The windmills are strongly built, and are designed to take the wind at any angle. The regulation of the motor is effected by an automobile switch, which cuts out the battery when the wind falls to a low pressure.

Salt Lakes to Be Utilized.

THERE are several extensive salt lakes in the State of Texas, U. S. A., which have long been regarded as worthless, but which it is now proposed to utilize for commercial purposes. Stock-growers have been using salt from the shores of these lakes for many years, but no effort has been made to refine it. Cattle eat it freely and it has no injurious effects. It is now proposed to purify this salt according to the usual methods and put it on the market. To collect the salt shallow tanks will be constructed, and when the water evaporates the salt can be obtained without being mixed with foreign ingredients.

Opening a New Industry.

THE United States Fish Commission has recently made some valuable tests looking to the utilization of the skins of water animals for clothing. They have already proved that several kinds of fishskins make excellent leather for some purposes. Salmon hide is found not only serviceable for boots, but among the Eskimos it has been used for generations in making waterproof clothes. The people of the Far North also use codfish-skins for jackets. The skins which the Fish Commission people have found practicable and durable are whaleskins and seal leather, which dye in beautiful colors.

Woolless Sheep.

THE United States Department of Agriculture has recently imported five woolless sheep—four ewes and a buck—for use in the extreme Southern States. A heavy crop of wool is a burden in hot, dry districts, resulting in a direct ill-effect on the quality of the mutton. These sheep are being experimented with by the Bureau of Animal Industry. They are hardy and are easy keepers. They were brought from the Barbadoes, where they proved profitable.

Commercial Travelers Using Automobiles.

LARGE numbers of commercial travelers in the United States of America are now using automobiles instead of making their trips on the railway. Some traveling men have tried the new method this summer and have been successful in doing more business, in covering more territory and in cutting down former expenses. It is claimed that one man while traveling in his car met eight farmers on the roads within a month, all having had a breakdown of their horse-drawn rigs. The drummer took them home in his car, and, as a result, sold new buggies and other goods.

A New Type of Pump which is sure to be exceedingly useful for certain purposes has been devised by a resident of the State of Virginia, U. S. A. This device, designed primarily for country houses and for small towns having no water-works, has for its principal object to provide an improved form of pumping, whereby a supply of water may be held under pressure in a pump-barrel within the well and gradually discharged through a valved pipe leading to a house or other point where the water is to be utilized.

Interesting Horseshoe Nails.—An American firm has assembled a particularly attractive collection of horseshoe nails. They include corrugated nails, requiring no clinching, nails for city use, lighter nails for soft country roads and still more delicate nails for track use. All are made of the same metal, which is so tough that a nail rolled out to a ribbon the thickness of heavy paper and three feet long shows no sign of weakness, and may be coiled to fit in a pill-box, while on being released it springs out to its original straightness.

Traveling Lighting Plant.—A locomotive engineer employed on an American railroad has devised a novel isolated traveling lighting plant, which consists of a small box-car equipped with a gasoline motor, operating a 300-light dynamo. This car will be attached to the rear end of the train and the light wires connected, thus furnishing the illumination for every car. With this arrangement the motor would be kept running at all times at constant speed, without reference to the operation of the trains and the necessity for storage batteries would be eliminated.

Tugboats in the United States.—It is stated on the authority of the *Nautical Gazette*, a technical journal of the highest character, that \$800,000,000 is invested in tugboats in the United States of America. There are by actual count no less than 521 tugboats attached to the port of New York, which does not include the dozens belonging to other ports which are seen in the harbor every day.

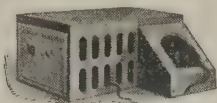
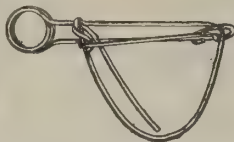
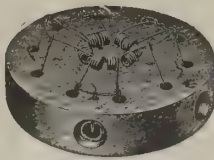
States Rich in Lumber.—As illustrating the extent and value of the forests of the United States of America, it is pointed out that according to expert estimates there are in the single State of Oregon 235,000,000,000 feet of timber, which, if cut into lumber and sold at the minimum price of to-day, would bring \$4,020,000,000, or almost twice as much as the entire amount of money—gold, silver and paper—in circulation in the United States. An equal amount is standing in the State of Washington and about half as much in California. And it is the finest timber and lumber in the world for ordinary purposes—for house building, for bridges, for railway cars and other necessary purposes.

ANIMAL TRAP CO.,

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The Largest Manufacturers of
MOUSE, RAT AND GAME TRAPS IN THE WORLD.

Particular attention given to export orders. Illustrated catalogue free, giving full particulars. Order through your Exporter.

**"Out o' Sight"**
Mouse and Rat Trap,
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4 sizes.
For catching small fur-
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Self-Setting Wood
Choker Mouse Trap.
1, 2 and 3 Hole, Square.
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Extra heavy.
Well made.**Pennsylvania**
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Master's
Voice."*

The great soprano has consented to the publication of records of fourteen selections originally made for her own private use. You can hear them only on the

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**Linseed and Cotton Seed
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house at export rates. References: Any commercial agency
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This ribbon can be put on the machine without soiling the hands.

A. P. LITTLE,Manufacturer of
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SATIN-FINISH
TYPEWRITER RIBBONS.****LONG-LASTING.
NON-FILLING.
BRILLIANT to the FINISH.**

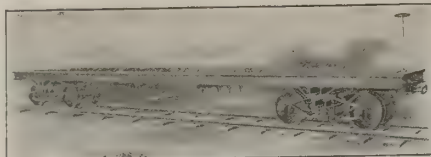
These ribbons are unique in all respects except printing—others will print, but Little's Brilliant Satin-Finish Ribbons copy stronger from start to finish than any others, because the pigments are better, made differently, cost more. No risk. Everything guaranteed.

**Rochester, N.Y., U. S. A.****The Improved United States Cream Separator**Was awarded **GOLD MEDAL** (The Highest Award) at the Pan-
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France, 1900.And the official records show that in the Model Dairy at the Pan-American ITS WORK EXCELLED EVERYTHING, averaging .013%
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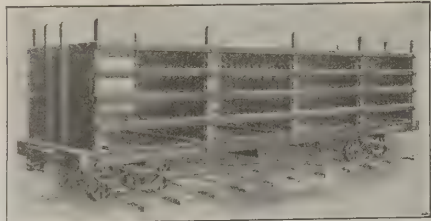
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Bellows Falls, Vermont, U. S. A.U. S. Separator. Dairy Size.
With Low Supply Can.Cable Address: Vermonfarm, Bellows Falls.
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CUBAN CANE CAR.

FOREIGN DEPARTMENT:
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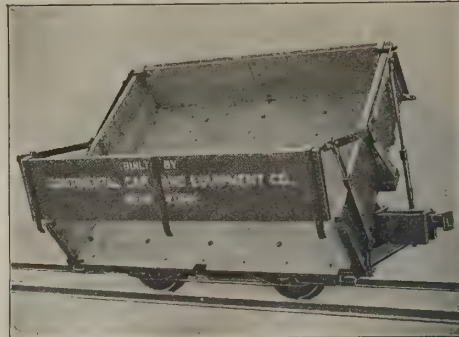
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We also make Special Cars for all purposes, from designs furnished, or will furnish our own designs upon request

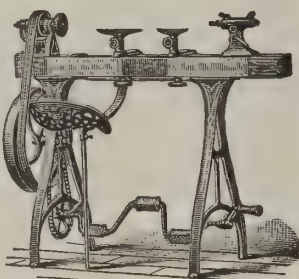
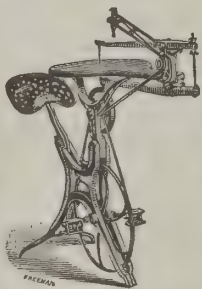
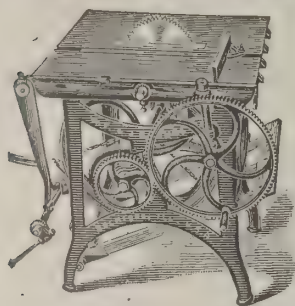
FOR FOREIGN MARKETS.—Our Cars are taken apart and packed for shipment according to the best known methods.

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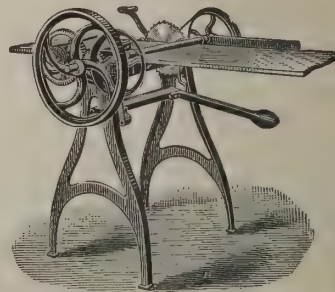


This cut shows our modern Dumping Car. It dumps on both sides of the track and is built strongly for hauling and dumping dirt, rock, sand, clay, ore, etc. Built in all capacities from 1 to 5 cubic metres.



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THE MONROE IS A HIGH-GRADE REFRIGERATOR, BUILT FOR THE HOUSEHOLD.

Each food compartment is moulded in one solid piece of porcelain. The corners are rounded. There are no joints or crevices for the food to decay in. The porcelain is white, durable, and as easily cleaned as a china dish. The ideal house refrigerator, absolutely sanitary. The prices here quoted for foreign markets only (U. S. gold or its equivalent) include crating, ready for transportation abroad, delivered f. o. b. at New York City.

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Oak Exterior, Crated, measures 49 x 27 x 47 inches. Gross weight, 630 lbs.

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All sizes carried in stock ready for immediate shipment. Special sizes built to order.

Our latest catalogue, illustrating and describing the various styles of Solid Porcelain Refrigerators made by us, mailed postpaid.

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For grace, solidity and beauty the New Michael Four-Passenger Adult Lawn Swing has no equal. All parts are bolted or screwed. We use no nails except in chair slats. No tools required in setting up. We guarantee the New Michael Four-Passenger Adult Lawn Swing to be the best made. Opens and closes like a jack-knife. Contains about 20 cubic feet each, and weighs, each, 150 lbs.

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Is the neatest and best article ever placed before the people. Folds as shown in cut. Painted red or green, or natural wood finish.

Six Folding Rockers, crated, containing about 14 cubic feet; weight, 48 lbs.

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Our Lawn Settees and Folding Chairs are the most practical ever placed upon the market. The curve in back is exactly right. Painted red or green, or natural hardwood finish. Six 5-foot Settees, crated, containing about 25 cubic feet; weight, 96 lbs.

Price, per dozen.....\$18.00

Six Folding Chairs, crated, containing about 14 cubic feet; weight, 30 lbs.

Price, per dozen.....\$6.00

NOTE.—The prices above quoted are f. o. b. New York City.

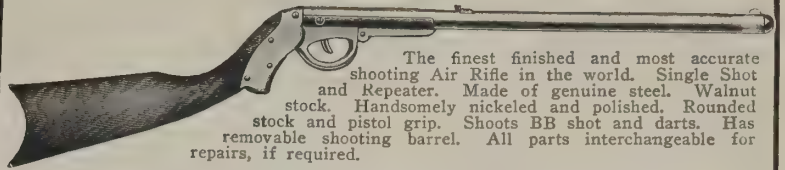
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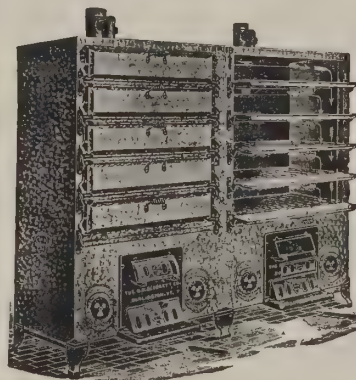
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Portable Oven No. 119, with one side open.

We make the kind the United States Government buys and which is being adopted by Foreign Governments, as well as by those interested in the economical baking of the products of flour, meat and vegetables.

Either Coal, Wood, Natural or Artificial Gas can be utilized as Fuel. Used by Bakers, Hotels, Steamships, Restaurants, Confectioners, Colleges, Asylums, Private Residences and in Japanning, Enameling and Core Baking.

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of many sizes, both traction and non-traction, for wells 50 to 1000 feet deep, and gives full illustrated instructions for operating.

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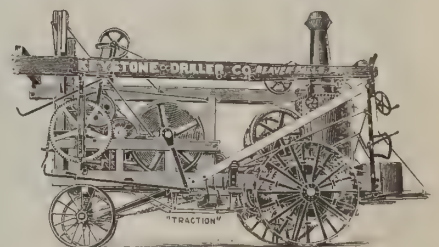
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Our machines are the sum of all excellence, in use all over the world.

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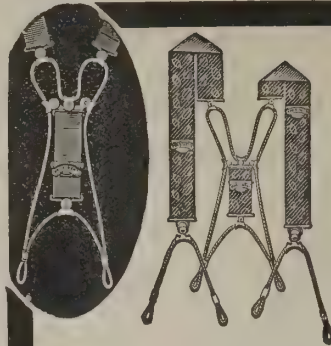
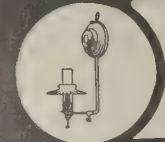
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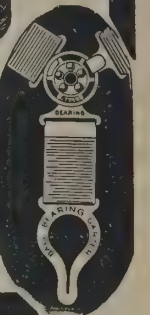
Swing like a pendulum with the motion of the leg. Lay flat; no binding; fit every leg perfectly. Easily adjusted. No stitching. Extra long adjustment.

Finest web, in many colors and patterns; packed in handsome boxes, 12 to carton. Handsome counter display carton with 3 doz. PRESIDENT SUSPENDERS, \$4.37½ per doz., for all models except "Extra Fine," which are \$7.10 per doz.

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Liberal Discount on above prices in quantity lots. Write for Discount Sheet. Illustrated Catalogue free.

The C. A. EDGARTON MFG. CO., Box 12A, Shirley, Mass., U. S. A.



The S. Howes Co.

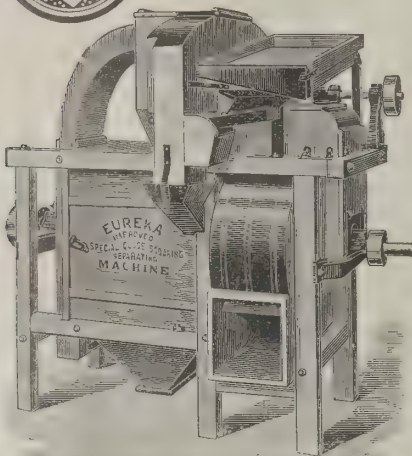
Manufacturers of

"EUREKA"

Grain Cleaning Machinery,

Seed Cleaners, Flour, Bran and Feed Packers, Cement and Plaster Packers, Coffee Roasters, (Gas, Coal and Coke) Coffee Cleaners and Polishers, Coffee Hullers, Rice Hullers, Graders, Separators and Cleaners. Special Machinery for Flour Mills, Grain Elevators and Warehouses, Cement Mills, Rice Mills, Coffee and Spice Mills.

Catalogues sent free on application.



The S. Howes Co.,

THE EUREKA WORKS,

Silver Creek, N. Y.

Established 1856.

TARR & WONSON'S COPPER PAINT

For Wooden Vessels' Bottoms, prevents boring of worms and all marine growth.

Awarded Eight Highest Medals:

Gold, Silver and Bronze.



Excels on Every Point.

Cheapest to Use in the End.

TESTIMONIAL. NEW YORK, Aug. 3, 1903.

Messrs. Tarr & Wonson, Ltd., Gloucester, Mass.

Gentlemen: It affords me great pleasure to comment to the credit of your copper paint.

I used your paint on my vessel here December 10, 1902; bottom in poor condition for good coat-damp; remained at the dock here forty-nine days; thence to New London, Conn.; thence to Cay Frances, Cuba, where we remained at anchor in only 18 feet water—water very warm—for eighty-seven days; thence back to New York, when I hauled on dock for painting again, July 5, 1903. I found the surface clean and clear of sea growth of every nature, hence my relative feelings toward your product is, beyond doubt, to the head of the list to stand the severe test as it did of the shoal, warm, clear Cuban water, and I claim its outfit is complete. Yours very truly,

(Signed) A. A. LOWELL, Master Sch. Edward H. Blake.

THE WORLD'S STANDARD FOR FORTY ONE YEARS

RACING COMPOUND for Wooden Yachts' Bottoms, Bright and Smooth.

Manufactured Only by TARR & WONSON, Limited, GLOUCESTER, MASS., U. S. A.

The Handy Fruit and Vegetable Slicer

The most interesting kitchen utensil ever invented. It slices every kind of fruit or vegetable into an infinite variety of unique and fancy designs, making an entirely new, novel and delicious product.

Is invaluable for making delicate salads, garnishings, etc. Makes Juliennes ten times as fast as by the ordinary method and is the only utensil that will produce Lattice Potatoes. Is extremely simple to operate and sells rapidly wherever shown.

\$16⁵⁰/₁₀₀ Upon receipt of SIXTEEN and 50-100 DOLLARS in U. S. Gold or its equivalent, we will deliver boxed, ready for steamer, F. O. B. cars New York, one gross [144] No. 6 X SLICERS, for Export only. Weight boxed, 120 lbs.

NOTE.—To facilitate our rapidly increasing export trade we desire to arrange with one responsible business house in each trade center of the world, to handle our NO. 6 X SLICERS and other specialties manufactured by us.

HANDY THINGS CO.,

Manufacturers,

LUDINGTON, 40 to 50 Rowe Street, MICHIGAN, U. S. A.

THEY CUT, PLANT, SPRAY, DIG and SORT.

Aspinwall Potato Machines

Make Large Profits Easy by Economizing in Time, Labor and Money.

We make a strong, practical and automatic machine for every stage of Potato Culture; in fact, the Aspinwall is the only complete potato implement line in the world.

With Our Machines seed is quickly cut to best advantage. Planting, fertilizing and covering are accomplished at any depth and width of row desired. Spraying is effectively done for bugs and blight. Digging and sorting are made pleasant and agreeable work by our time and labor saving machines.

Our catalogue, illustrating and describing the various styles of

ASPINWALL POTATO

Planters, Cutters, Sprayers, Diggers and Sorters made by us, mailed postpaid.

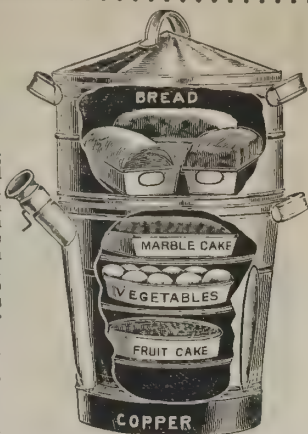
Aspinwall Mfg. Co., Jackson, Mich., U. S. A.



"IDEAL" Steam Cookers

FREE Book of 36 pages, printed in colors; handsomely illustrated; tells all there is to know about steam cookers—round or square. The 1904 models of "Ideal" Steam Cookers are entirely new in principle, design and special features. The only steam cookers made in which both round and square have whistles to call the cook when water is needed. Seamless copper tank bottoms.

Cooks a whole meal over one burner, on gasoline, oil, gas or common cook stove. Reduces fuel bills one-half. Agents wanted.



We Want Foreign Agents, and to get them quickly, we are making the following liberal proposition for this month:

No. 20, Sq., Copper Tank
Retail \$6.50 Each.
18-gallon food capacity. 12 Cookers in a box. Measurements and weights of boxes holding 12:

Gross weight, 210 lbs.
Net weight, 144 lbs.
Cubic feet in 12—28.
\$39 doz., f. o. b. N. Y.

No. 6 Round Cooker
Retail \$5.00

10-gallon capacity. 12 Cookers in a box, nested, solid. Measurements and weights, 12 in a box:

Gross weight, 150 lbs.
Net weight, 120 lbs.
Cubic feet in 12—11 1/2.
\$33 doz., f. o. b. N. Y.

These are our best sellers, but we make thirty different sizes of Cookers. Boxed ready for steamer. Order direct or through export house; in latter case, mail duplicate order to us to avoid errors.

We manufacture a full line of Kitchen Specialties and Blue-Flame Wickless Oil Stoves.

TOLEDO COOKER CO., 2301 Albion St., Toledo, O., U. S. A.

F. R. PATCH MFG. CO.,

RUTLAND, VERMONT, U. S. A.

BUILDERS OF

Stone-Working Machinery.

Specialists in the Construction of Planing, Sawing and Polishing Machines for Stone.



The world-famed marble mills at Rutland, Vt., owned by the Vermont Marble Co., are equipped with many of these machines which give the smoothest and best polished surface obtainable. This "Marble City" Polisher will polish any stone up to 3 feet in thickness. It has a swing of 7 feet 8 inches, so that by turning stone around, 15 feet or more square can be polished.

A patent wind-up apparatus either raises or lowers the polishing arm, as is desired, by merely pushing in or pulling out the lever shown near the handle in the cut. This rising and lowering apparatus consists of small gears on a level shown at the top of the machine, which itself rises and falls on the screw shafting, easily seen in the cut.

The total height of the polisher is 9 feet 6 inches and weighs, when boxed ready for shipment, 1,600 lbs.

We carry a large number of these in stock, so that prompt delivery can be made.

NEW ENGLAND BUTT CO

PROVIDENCE, R. I., U. S. A.

MANUFACTURERS AND EXPORTERS OF

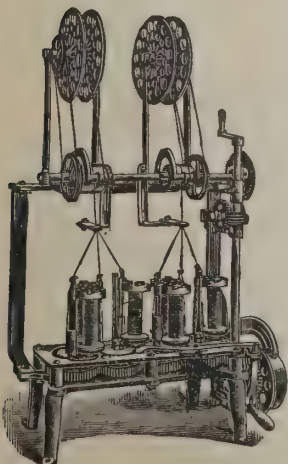
Braiding Machinery

For all styles and kinds of Braided Fabrics. Round and Flat Braids, Solid Sash and Curtain Cords, Shoe and Corset Laces, Banding, Candle Wicking, Etc. Prices,

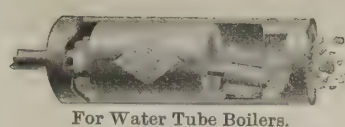
\$10.00 to \$160.00

Also a full line of Machinery for Insulating Electrical Wires and Cables, Measuring, Winding and Taping Machines.

ORDERS FILLED THROUGH COMMISSION HOUSES AND CORRESPONDENCE SOLICITED. CATALOGUE "K" ON APPLICATION. LIEBER'S CODE USED.



HAVE YOU PURCHASED A DIAMOND BOILER TUBE CLEANER YET?



For Water Tube Boilers.

Operated by
Steam
or Compressed
Air.



For Fire Tube Boilers.

If you haven't, you are needlessly wasting fuel every day and consequently wasting money. If fuel is difficult to procure—if it is high in price—if you value the efficiency of your boiler, you should send at once for a

DIAMOND BOILER TUBE CLEANER.

The only known and successful device for removing scale and soot from water tube or tubular boilers. Is absolutely guaranteed to do as represented or money refunded.



TRADE MARK.

From 20 to 60 per cent. in fuel saved; prolongs the life of boilers, and is the means of avoiding possible accidents. Our Diamond Cleaner is used by the largest steam users in almost every part of the world, to whom we can refer you upon application. Every Diamond Machine bears this trademark as below, and is also stamped with our name.

None genuine without it.

POWER SPECIALTY COMPANY,

Sole Manufacturers,

Windsor, Ont., Canada. Berlin, Germany.

Address for particulars, Main Office,

513 Washington Arcade, Detroit, Mich., U. S. A.

Formerly Buffalo, N. Y.

**OUTSIDE
CLOTHES
DRYER.**

**CAMBRIDGE
EXTENSION
LADDERS.**

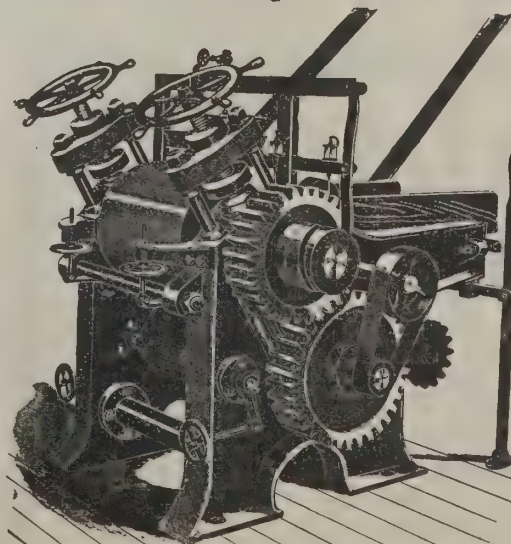
C. W. H. Moulton & Co.
Manufacturers and Exporters.
SOMERVILLE, MASS., U. S. A.

**Full line of Step Ladders,
All kinds of Single Ladders, Lawn Settees,
Ironing Tables, Wash Benches, Clothes
Dryers, Painters' Staging Outfits,
Patent Fire Ladders.**

Orders filled through commission houses.
Correspondence solicited. Catalogue "M" on application

THE Latest Improved Stem Roller

ON THE
MARKET.



Of very strong construction and containing the very best in workmanship and material throughout.

It will press stems to a thinness not easily distinguished from the leaf in the manufactured product.

It is also provided with a Roll-Moistening Device, insuring constant moistening of the rolls.

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N. KIMURA & CO., Tokio, Japan
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ROCK CITY TOBACCO CO.,
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For prices and full particulars write

JOHN B. ADT MACHINE WORKS, Baltimore, Md., U. S. A.



Headquarters for ELECTRIC NOVELTIES.
WE ARE SELLING


Battery Hanging Lamps.....\$10 00	Genuine Electric Insoles.....\$0 25
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\$12 Belt with Suspensory.....\$ 2 50	Electric Books at.....Low Prices

We Excel and Undersell All on Everything Electrical.
PRINTED MATTER IN ALL LANGUAGES.

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Agents wanted. Send for New Catalogue. Cable Address: "Fletcher, Cleveland."

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were awarded the Grand Prix and Gold Medal at the Universal International Exposition of Paris, 1900. All competition eclipsed.

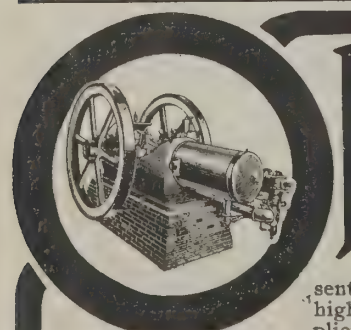


SIMONDS MFG. COMPANY,
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STEWART'S
"CONSAPICO" DUPLEX
SAFETY PINS



HAVE THE MOST EFFECTIVE GUARD TO PREVENT CATCHING OR TEARING OF MATERIAL
MADE IN NICKEL-PLATE AND JET BLACK.
CONSOLIDATED SAFETY PIN CO.,
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Olds Gas and Gasoline Engines

Are built on lines of strict originality, and are protected by the Olds patents. The essential parts of our engines combine the highest efficiency with the greatest simplicity of construction and operation. No engine made approaches the Olds for economy and durability.

Stationary Engines, - 2 to 100 H.-P.
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Write to-day for full information and new illustrated catalog.
OLDS GASOLINE ENGINE WORKS, 209 River St., Lansing, Mich.

The P. A. Blichert Mfg. Co.
106-108 READE STREET, NEW YORK.
57 Illinois St., Chicago. MANUFACTURERS OF



POLISHOLA,
The ideal paste for all kinds of black leather shoes.

Patent Leather and Russet Pastes, Empress, Queen and Princess Dressings, Ebony Waterproof Polish.

Also other Polishes and Dressings of every description.
Correspondence solicited in French, German and other languages.

THE SPARROW CO.
MANUFACTURERS AND EXPORTERS OF

HIGH-GRADE CHOCOLATES

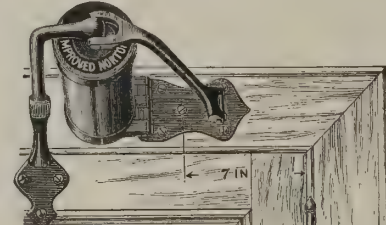


Orders Filled Through Commission Houses. Correspondence Solicited.

Catalogue "S" will be sent on application to interested buyers.

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NORTON DOOR CHECK CO.
MANUFACTURERS AND EXPORTERS OF THE



IMPROVED
Norton Door Check and Spring.

Our regular checks are made in six sizes, to fit any size door; are either right or left hand and may be applied to either side of a door without change. Controlled by air and a strong spring. The oldest and most reliable check made. Orders filled through commission houses. Correspondence solicited. Catalogues on application.

LIST PRICES.	
No. 00.....	\$10.00
No. 0.....	7.00
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No. 2.....	5.00
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Subject to Discount.

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HYDRAULIC BALING PRESSES.

For Baling Cotton, Wool, Rags, Hemp, Etc.

Simple, compact and very powerful; worked by either hand or steam power; not liable to get out of order and very durable; they are the best baling presses made.

Prices from \$175 to \$350, according to size.

The Hydraulic Press is the most powerful press made.

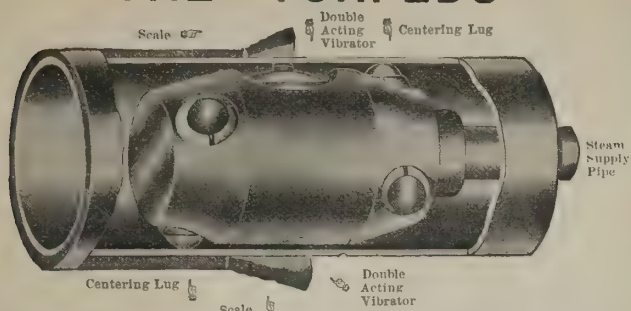
COTTON SEED OIL MILLS. We make various sizes of capacity from 5 to 150 tons of seed per day. Our mills embrace all the modern improvements, and will give the best results. We will erect and complete, guaranteeing capacity.

Manufacturers of Smoking and Plug Tobacco Machinery.

THE CARDWELL MACHINE CO., Richmond, Va., U. S. A.



THE "TORPEDO"



SOLVES THE SCALE PROBLEM.

The "Torpedo" is the latest and most approved machine for removing scale from fire-tube boilers. Operated by steam or compressed air and rapping lightly against the inner surface of the tubes at the rate of 3,000 times a minute, breaks loose and jars off all the scale on the outside of the tube. The "Torpedo" has but one moving part, is harmless to the tube and guaranteed to save its cost in fuel within 6 months.

Made in all sizes, from 1 1/4-in. to 8-in. tube. Order sample through any American export house, naming inside diameter of tubes. Write to-day.

The General Specialty Co., 70 Carroll Street, Buffalo, N.Y., U. S. A.

HOPS FOR EXPORT

OUR HOPS ARE CAREFULLY SELECTED AND PUT UP FOR SHIPMENT TO ALL PARTS OF THE WORLD.

DOLE BROS.' "SUPERIOR" HOPS—In cases containing 20, 30 or 50 lbs. each; in packets of 1 lb., 1/2 lb. or assorted.

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DOLE BROS.' "SPECIAL" HOPS—Put up in Duck-wrapped bales containing 10 lbs. each.

ALSO HOPS IN LARGE BALES FOR BREWERS.

Orders promptly executed through the leading commission houses. Correspondence solicited.

DOLE BROS. HOPS AND MALT CO.,

101 Commercial St., BOSTON, MASS., U. S. A.

EVERY HEEL IS A SALESMAN.

THAT'S WHY FOSTER FRICTION PLUG RUBBER HEELS ARE SELLING SO FAST.

Every Pair Sells from Two to Fifteen Pair.

It is a RECORD and a FACT that one pair of FOSTER HEELS proved so satisfactory to the wearer that 15 pair have been sold on this one party's recommendation.

"ELASTIC TIP CO., Boston:
"Dear Sirs—I have worn your Foster Rubber Heels on slippery pavements, on ice and snow, and they positively do not slip. They are simply perfect. Yours truly,
"N. E. VAN VOORHIS, Newton."

"MERIT ALWAYS WINS"

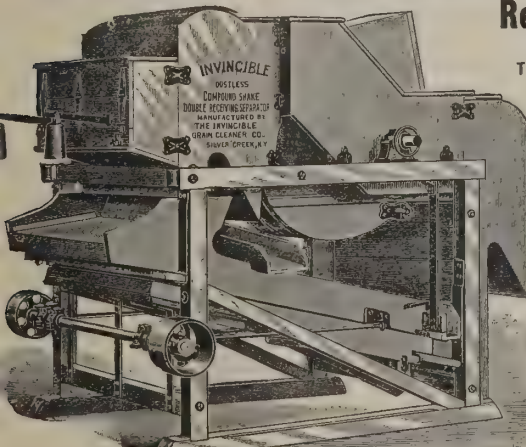
And that's why people are discarding their rubber heels and putting on the Foster, appreciating the many advantages which the Foster Heel has over all other makes.

FOSTER RUBBER CO., 370 Atlantic Ave., BOSTON, MASS.



The INVINCIBLE Compound-Shake Dustless, Double-Receiver Separator.

Manufactured in 11 sizes by The Invincible Grain Cleaner Co.



Especially designed to meet every requirement of warehouses and elevators. Its Compound Shake makes it a smooth-running machine, and thus does not cause vibration or trembling of the building in which it is operated. It is provided with automatic feeding attachment. Its capacity is large, and its efficiency and durability unsurpassed.

Send for full particulars to the manufacturers,

THE INVINCIBLE GRAIN CLEANER CO., Silver Creek, N. Y., U. S. A.

European Offices: 37-38 Seething Lane, London, England.

The Premier American Shoe Polishes



OKOLITE,

An Oily Paste Polish for ALL Black Leathers, Also

Brown Okolite

For ALL Russet and Tan Shoes.

We are Manufacturers of over 60 varieties of Shoe Dressings, Polishes, Harness Oils, Etc.

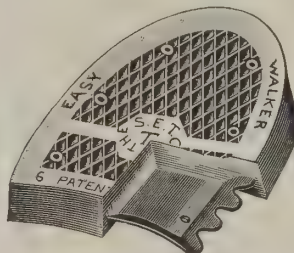
SPECIAL INTRODUCTORY OFFER TO FOREIGN BUYERS:

6 dozen Black Okolite, 3 dozen Brown Okolite, 1 dozen small and 1 dozen large Black Combination, 1 dozen small and 1 dozen large Russet Combination, 1 dozen Patent-Leather Polish, 1 dozen Easy Method Dressing and 1 dozen 7 Oil Blend Dressing for Ladies' Shoes. This entire combination offer in one case for \$12.00 in U. S. currency. Orders executed either direct or through export commission firms. Correspondence solicited.

The Burckard Blacking & Oil Co., BALTIMORE, U. S. A.

The Easy Walker Rubber Heels

Are Acknowledged the Best on Earth by All Practical Shoemakers.



Contain patent spring steel holding plate, which facilitates labor and saves the cost of cement; attached permanently in five minutes; made of fine Para rubber; will outwear two pair of leather heels.

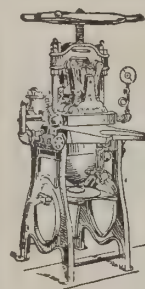
Whole and Half Heels for Men and Women, Largest Line in the World.

Rubber Soling 1/8, 3/16 and 1/4 inch thick.

Orders filled through commission houses. Correspondence solicited. Booklet "A" on application. Manufactured by

THE SPRINGFIELD ELASTIC TREAD CO.

Springfield, Ohio, U. S. A.



VULCANIZING OUTFITS

FOR THE

Manufacture of RUBBER STAMPS

A PROFITABLE ENTERPRISE.

Write for Catalogue No. 7.

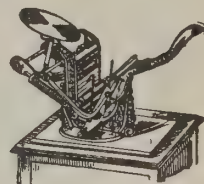
Self-Inking HAND PRINTING PRESSES.

SOLID RUBBER TYPE.

STEEL DIES AND STENCIL SUPPLIES.

THE J. F. W. DORMAN CO.,

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"NEW JERSEY" COPPER PAINT

LEADS THEM ALL,

So Our Testimonials Say.

We guarantee this Copper Paint to be the easiest to apply and, owing to its being so finely ground, it is the smoothest paint in the market.

Highest Medals from National Export Exposition and American Institute, New York City.

New Jersey Yacht Red Copper

For Yachts. Brightest Color Made.

New Jersey Seam Paint,

A Perfect Substitute for Pitch.

NEW JERSEY PAINT WORKS,

HARRY LOUDERBOUGH, Proprietor,

JERSEY CITY, N. J.

U. S. A.

Remarkable Fact.

This cut is a copy of a photograph of a board having one end painted with New Jersey Copper Paint, manufactured by Harry Louderbough, proprietor of New Jersey Paint Works, Jersey City, N. J., U. S. A., and placed in the water at Port Royal, S. C., for five months. Upon the unpainted end you can note the ravages of the salt-water worm so destructive to wood, and also the large number of barnacles that have fastened upon it. Observe the painted end, where New Jersey Copper Paint was applied—its splendid condition.

A PAINT THAT PROTECTS.

The board here represented was placed in the water at Port Royal, S. C., by me, and left in the water five months. The painted end was as good as when it was placed in the water.

MILLS EDWARD, Master Schooner "Florence Shay."

DEMING PUMPS,

HAND AND POWER,

Known everywhere as "THE WORLD'S BEST."

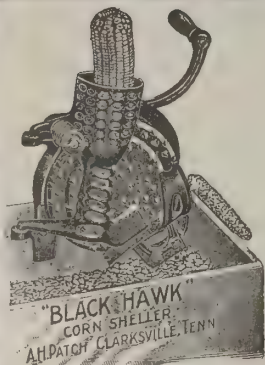
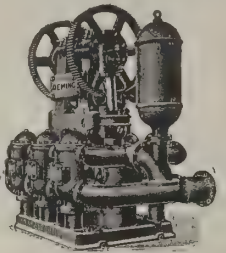
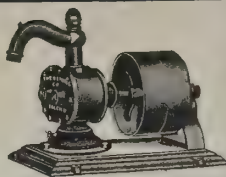
Cistern and Pitcher Spout Pumps, Hand and House Force Pumps, Deep Well Pumps and Standards, Iron and Brass Cylinders, Windmill 3-Way Pumps and Standards, Triplex Power Pumps, Rotary Pumps, Hydraulic Rams, Irrigating Pumps and Cylinders, Spray Pumps, etc., etc.

Catalogues furnished in English and Spanish.

The Deming Company,
SALEM, OHIO, U. S. A.

New York Office: 56 Pine Street.

Orders executed through New York export merchants.



PATCH'S PATENT "Black Hawk" Corn Sheller and Separator.

14th Year of Success.

BEST Hand Sheller ever made. Original, Honest, Durable. Shells rapidly; takes every grain off the cob. Easy to use and always ready.

WILL LAST A LIFETIME.

Weight, 15 lbs. Capacity, 8 to 14 bushels per hour. Largely of Malleable Iron. All bearings chilled. Attached to any box instantly by Clamps.

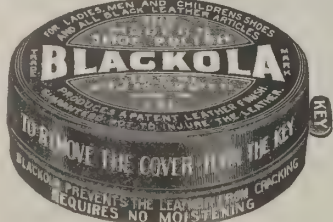
SPECIAL EXPORT PACKAGES. Order direct or through any reliable Export Commission House.

Beware of Imitations. Insist on having Patch's Patent "Black Hawk" Corn Sheller. All others are Frauds.

A. H. PATCH, Patente and Sole Maker, **Clarksville, Tenn., U. S. A.**

The Best-Selling Shoe Polish

IN AMERICA.



TO OPEN THE BOX
TURN THE KEY.

EVERY BOX HAS OUR OPENING KEY
ATTACHED TO REMOVE THE COVER.

BLACKOLA is different from every other shoe polish in quality and convenience.

MANUFACTURED SOLELY BY

THE WORLD POLISH MFG. CO.

Dealers are requested
to write for sample.

YORK, PA., U. S. A.



BOX STRAPPING OF ALL KINDS.

STEEL AND WIRE BOX STRAPS.

Flat, Plain, Embossed or Twisted,

With or Without Nail Holes.

Security Seals for Wine Cases.

Box Corner Fasteners, All Sizes.



MANUFACTURED BY

STANDARD METAL STRAP CO.,

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Cable Address, "Metalstrap."

NEW YORK, U. S. A.



PAINT.

Ready-Mixed Paints for Houses, Barns, Fences, Roofs,
Iron and General Structural and Bridge Work.

American Copper Paint, Yacht Red and Yacht Green, Anti-Corrosive Submarine Composition, First Coat; Anti-Fouling Submarine Composition, Second Coat; for Bottoms of Iron and Steel Vessels.

WHITE LEAD, ZINC, COLORS IN OIL,
OIL AND VARNISH WOOD STAINS, PURITAN ENAMELS,
OLD GLORY METAL POLISH, in Liquid or Paste Form.

Sample Cards on application. Special Colors to order. Orders filled through commission houses. Correspondence solicited.

American Paint and Color Co.,
388 PEARL STREET, NEW YORK, U. S. A.

FOR THE HOME, LIBRARY, SICK ROOM,
STUDIO, OFFICE, SCHOOL ROOM.

THE STANDORETTE.



TRADE MARK.

An Invalid's Stand, Easel, Reading Stand, Book Rest, Music Stand, Card Stand, Sewing Stand, Drawing Board, all in one handsome piece of furniture. The top can be raised or lowered, and revolves around the pedestal; automatic adjustments for tilting the top at any angle; folds compact for export. Box containing 6, gross weight, 150 lbs.; net, 100 lbs. Cubic feet, 61.2. Box containing 12, gross weight, 300 lbs.; net, 200 lbs. Cubic feet, 14.

All above articles made of steel tubing; finished, black enameled, oxidized copper or nickel-plated. Send for full particulars, prices, etc.

D. H. ALLEN & CO., Miamisburg, Ohio, U. S. A.

Woolsey's Copper "BEST" Paint

HAS NO EQUAL,

As its increased consumption each year clearly demonstrates. The same can be said of our full line of Marine Specialties, of which we are the largest manufacturers in the world. We guarantee our Copper Paints to be superior to any other make.

Yacht Copper Red,
Yacht Copper Green,
Yacht Black,
Yacht White,
Rubber Seam Paint,



Marine Black,
Marine White,
Marine Green,
Bronze Green,
Smoke-Stack Black.

Anti-Corrosive 1st Coat **Iron Bottom Paint**, Anti-Fouling 2d Coat. Also Manufacturers of Varnishes, Japans and a full line of house paints.

C. A. WOOLSEY PAINT & COLOR CO.,
JERSEY CITY, NEW JERSEY, U. S. A.

ESTABLISHED 1889.

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Importers and Exporters of

Watches and Clocks, Solid Gold and Plated Jewelry in all its branches, Optical and Fancy Goods, Pocket and Table Cutlery, Yankee Staple Notions and the latest American and European Novelties.

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We will mail our new illustrated catalogue free to dealers only.

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on Application

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Elevating, Conveying, Power-Transmission Machinery.



Mortar and Concrete
Mixers.



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Self-Propelling
Tripper.

Descriptive Catalogues on All Lines Free.
Our Prices Are Reasonable; Our Discounts Liberal.

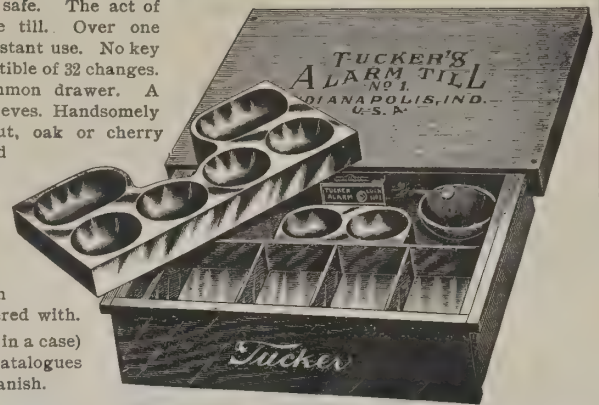
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The Tucker Alarm Cash Till.

A perfect day safe. The act of closing locks the till. Over one million now in constant use. No key to be lost. Susceptible of 32 changes. Opens like a common drawer. A terror to sneak thieves. Handsomely finished in walnut, oak or cherry woods. Varnished and polished.

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Sounds the alarm promptly if tampered with. Delivered (1/2 doz. in a case) free to vessel. Catalogues in English and Spanish.



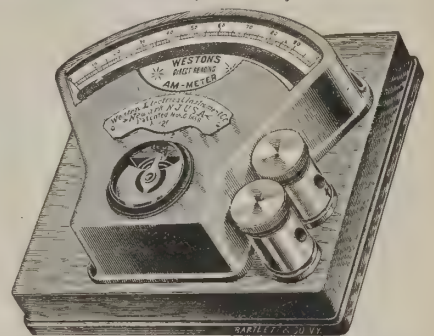
TUCKER & DORSEY MFG. CO., Indianapolis, Ind., U. S. A.
Selling Agents: John H. Graham & Co., 113 Chambers St., New York City.

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Waverly Park, NEWARK, N. J., U. S. A.

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Voltmeters,
Millivoltmeters,
Voltammeters,
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Ammeters,
Ground Detectors and
Circuit Testers,
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Portable Galvanometers.



Our Portable Instruments are recognized as The Standard the world over. The Semi-Portable Laboratory Standards are still better. Our Station Voltmeters and Ammeters are unsurpassed in point of extreme accuracy and lowest consumption of energy.

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LONDON—ELLIOTT BROS., Century Works, Lewisham.
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NEW YORK OFFICE—74 Cortlandt Street.

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Cable Address, "Artesianos, New York."

Manufacturers of everything required to drill
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WATER, OIL & GAS.

Any depth from 25 to 5,000 feet.

Also Special Tools for

Soundings and Test Bor-

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Mineral Prospecting

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Mines; Light, Portable

Outfits operated by Man Power. We furnish

Pipes, Casing, Sucker Rods, Tubing, Fishing

Tools, Bidders, Engines, Etc.

Complete Machines and Experienced Men

sent to any Country or Climate. We have the

largest and most varied experience of any

firm in this business in America.

Catalogues with hundreds of engravings

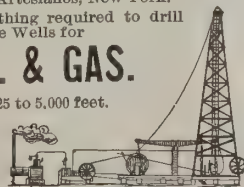
and estimates furnished on application.

When writing, always state fully what

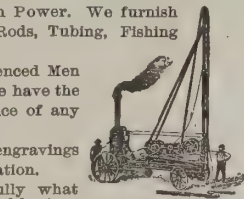
is desired, giving greatest depth of borings

required, if in Earth or Rock, and if for

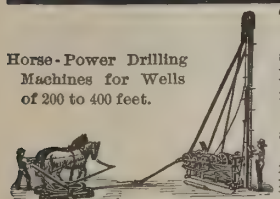
Water, Oil, Gas or Minerals.



Machine for 2,000 to 4,000 ft.



Steam Rigs for 200
850, 600 and 1,000 ft.



Horse-Power Drilling
Machines for Wells
of 200 to 400 feet.

HIGH-GRADE FIRE APPARATUSES.

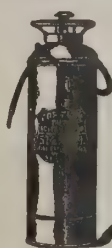
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CHEMICAL ENGINES,
TRUCKS,

For Storehouses, Homes,
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or Fire Departments.

Please pay us a visit when you come
to the Exposition in 1904.

When the apparatus is loaded it will throw a stream of gas (which gas is the best fire extinguisher) at the distance of 50 feet. Any woman or child can operate it as well as an expert man. It is always charged and ready for use, but it has no pressure until the moment of using. It can be used every day, lasting a lifetime. Once discharged or used it can be charged again in one minute.

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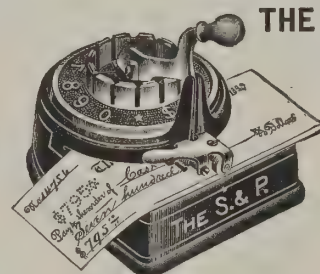
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AUTOMATIC and POSITIVE FEED.

Net Weight about 4 pounds.

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Cuts fancy edge on silk or cloth. Will cut Chamols Leather, Kid, Morocco Leather, Etc. Will also cut several (10, 12, 14 or more) thicknesses of goods. Fancy paper trimmed for decorations. Machine useful in every household. Will fit any table. Agents wanted in every country. Order through New York commission houses, sending us copy of order. Send for circulars and export prices to

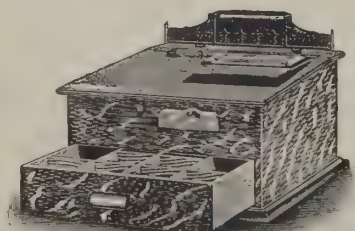
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Net Weight 3 3/4 pounds.

"SECURITY" Cash Recorder

The only machine that gives you an absolutely correct record of EVERY transaction from the time your store opens until it closes, and making it out of the question for your cash NOT to balance.



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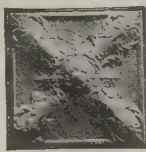
James Hill & Sons, Adelaide, South Australia.

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Louis XIV.



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Art Metal CeilingExclusive and Artistic Designs Appropriate
for Any Style of Architecture.

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Made in Grand Rapids, Mich., U. S. A.

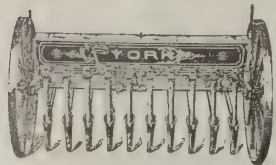
No. 498.



No. 73.



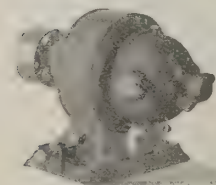
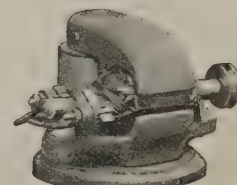
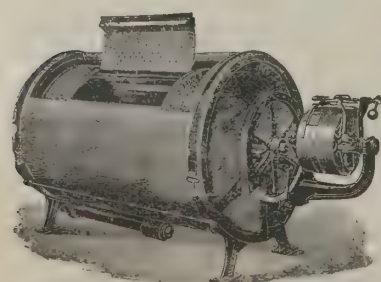
No. 4. No. 6.

Single door, zinc lined.
No. 498—Size, 23x15x37\$4.50
No. 070—Size, 25x17x40 7.70Double door, zinc lined.
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mailed postpaid to all
parts of the world.Seven walls to save the ice. Air
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golden finish. Walls packed with
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COFFEE EXCHANGE,
NEW YORK.

Henck & Dromgold & Co.

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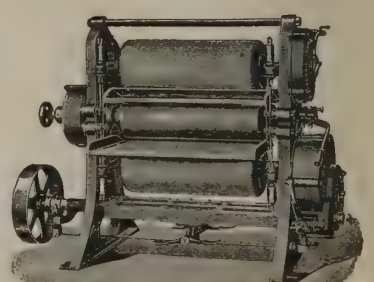
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Factory:
YORK, - PENNA.Cable Address:
"Adverbial," New York**ELECTRICAL APPARATUS FOR ALL PURPOSES****SPECIAL OFFERS FOR EXPORT ONLY.**Type "R," Sparking Dynamo.
Price, each, - \$15.50Type "B," Dynamo or Motor.
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delphia.Our Bulletins, illustrating and
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with hand power.
Price, 6, - - \$34.50**THE ELBRIDGE ELECTRICAL MFG. CO., Elbridge, New York, U. S. A.**

Washing Machine.

Manhattan Laundry Machinery Co.,

Manufacturers of the Highest-Grade

LAUNDRY MACHINERY AND APPLIANCES.COMPLETE OUTFITS for Steam Laundries, either custom or new work,
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Collar and Cuff Ironer.



No. 53.

Williamson's Hand-Power Cork Screws

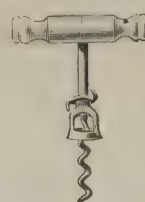
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Goods delivered f. o. b. steamer.

Order through your exporter.

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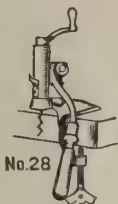


No. 1542.



No. 25

25. Quick and Easy.
Cork Puller.



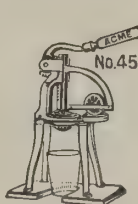
No. 28

28. Samson
Cork Puller.



No. 42

42. Quick and Easy
Lemon Squeezer.



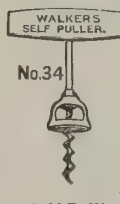
No. 45

45. Acme
Lemon Squeezer.



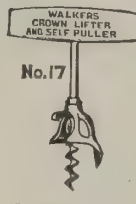
No. 48 1/2

48 1/2. Quick and Easy
Shaker.



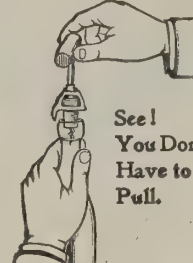
No. 34

34. Self-Pulling
Cork Screw.



No. 17

17. Self-Pulling
Cork Screw.



See!
You Don't
Have to
Pull.



48

48. Imperial
Shaker.

Any
American
Exporter
will buy
and
forward
these
goods.

ERIE SPECIALTY CO., Erie, Pa., U. S. A., Manufacturers for Export.

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MANUFACTURERS AND EXPORTERS OF

Solid Sole Leather Washers.

Axle Washers for All Foreign and Domestic Axles.

All Kinds of Plumbers' and Special Washers.

Orders Filled Through Commission Houses.

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Catalogue B on Application.

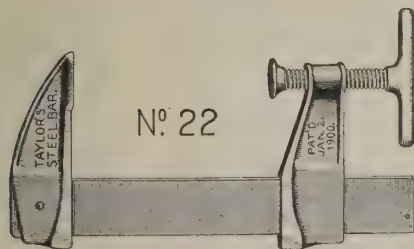


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have a world-wide reputation and are made to suit all sorts and conditions of people.

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No. 22

N. B.—The steel used exclusively in these Clamps is of a special high grade, testing more than double the strength of Bessemer steel for clamping purposes.

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MANUFACTURER AND EXPORTER OF

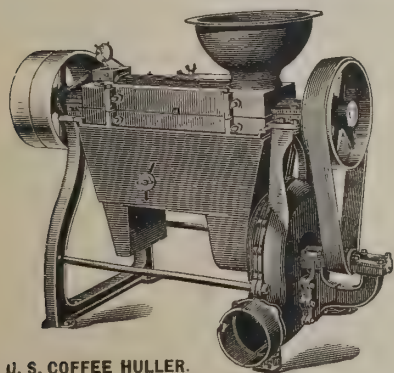
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Tested and adopted by the United States Navy Yards and leading concerns in the United States and foreign countries. Orders filled through commission houses. Address

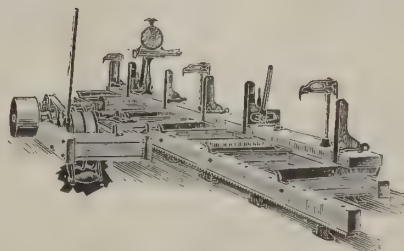


Correspondence solicited.
Catalogue No. 5A on application.

James L. Taylor,
NEWARK, N. J., U. S. A.



U. S. COFFEE HULLER.

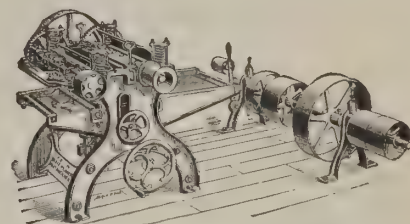


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We build a complete line of Machinery for Handling the Coffee Crop, also Large and Small Saw Mills to suit all conditions, and Wood-working Machinery. Write for Catalogue, Spanish or English.

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20-INCH DIXIE PLANER AND MATCHER.

For dressing and tonguing and grooving lumber, such as siding, flooring, ceiling, etc.

GOULD'S STEAM AND WATER PACKING.

ORIGINAL RING PACKING.

Patented June 1, 1880.—The Original Ring Packing.

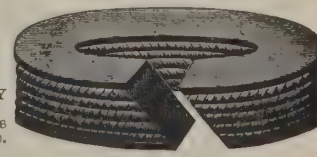
IN ORDERING, GIVE EXACT DIAMETER OF STUFFING BOX AND PISTON ROD OR VALVE STEM SELF-LUBRICATING, STEAM AND WATER TIGHT.

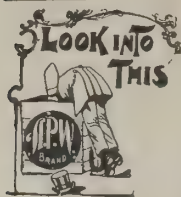
Less friction than any other known Packing. Never grows hard if directions are followed. Does not corrode the rod. EVERY PACKING FULLY WARRANTED.
N. B.—This packing will be sent to any address, and if not satisfactory after a trial of 30 days, can be returned at our expense. None genuine without this trademark and date of patent stamped on wrapper. All similar packings are imitations and calculated to deceive.

THE GOULD PACKING COMPANY,

EAST CAMBRIDGE, MASS.

ALBION CHIPMAN, TREAS.



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REGISTERED.

A. P. W. PAPER CO., ALBANY, N. Y., U. S. A.
The largest manufacturer of **TOILET PAPER** in the world.

CORRESPONDENCE SOLICITED.

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LASTS IN ALL SHAPES
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FOR MEN, WOMEN, YOUNG MEN AND MISSES.

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Manufacturers of the HIGHEST GRADE OF RUBBER GOODS.

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Air Pillows,
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Bandages,
Bath Caps,

Bed Pans,
Breast Pumps,
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Camera Sets,
Colon Tubes,
Cupping Cups,
Dental Dam,

Dilators,
Face Bottles,
Finger Cots,
Gas Bags,
Gloves,
Ice Bags,

Ice Caps,
Medicine Droppers,
Nasal Douches,
Nipples,
Nipple Shields,
Nursing Fittings,

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And a full and complete line of Fine Rubber Goods for the Hospital and Surgical Trade. Our new Illustrated Catalogue "D" sent free on application.

SILVER LAKE COMPANY, The Original Manufacturers of Solid Braided Cordage.
Boston, Mass., U. S. A.

WINDOW SASH CORD,
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COTTON, LINEN OR
ITALIAN HEMP.

ARC LIGHT and TROLLEY CORD.

Catalogue "A" on application.

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THE BEST IS THE CHEAPEST:

CLOTHES LINES,

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Church, Chamber and Concert Pipe Organ Reeds
A SPECIALTY.

Workmanship and Tone Quality Unexcelled.

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Manufacturers and Exporters of Solid Gold Front, Fine Rolled Gold Plate and Sterling Silver Jewelry.

New and Original Designs. Link and Lever Buttons, Studs, Scarf Pins, Hat Pins, Brooches, Silk and Metal Fobs.

Every Piece Manufactured by Us Fully Guaranteed.

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Massachusetts Brand.

Sash Cord,
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Railroad Cords,
Arc Light Cord,
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SEND FOR SAMPLES.

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Chalk Lines,
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SAMSON CORDAGE WORKS,

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INQUIRY OFFICE FOR NORWAY, SWEDEN
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COLLECTION OF CLAIMS.
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ESTABLISHED 1895.
KRISTIANIA, NORWAY.

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Chocolates**H. D. FOSS & CO.,** Manufacturers and Exporters of**QUALITY CHOCOLATES.**

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FIVE-POUND BOXES,

AND IN FANCY PACKAGES.

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**The "PIPE OF PEACE."**

Can't burn the tongue. Always sweet, dry and clean.

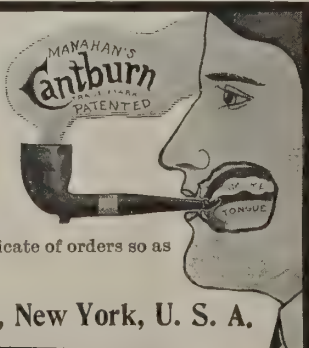
Saliva can't get into the pipe, become saturated with POISONOUS NICOTINE, leak back into the mouth and give you TOBACCO HEART. No valves, absorbent piths or smoke filters used, to become filthy and spoil the flavor of your smoke, and you can smoke any tobacco.

Fine briar and hard solid rubber stem, bent or straight.

Send export orders through buying and shipping agent, and send us duplicate of orders so as to avoid mistakes.

RELIABLE AGENCIES WANTED.

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Most dainty eating confection in the world. Crisp and delicious.

Orders filled through commission houses. Correspondence solicited. Send for Circular A.

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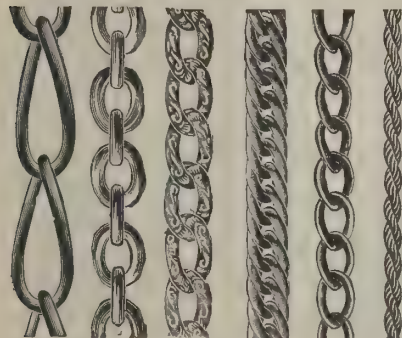


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Manufacturers of

RICH CUT GLASS

Honesdale, Pa., U. S. A.



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Manufacturers and Exporters of

Fine Rolled-Plate and Seamless Wire Chains, Neck Chains, Bracelets and Lorgnette Chains.

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Fine rolled plate, warranted 6 years.



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PREVENTED BY THE USE OF

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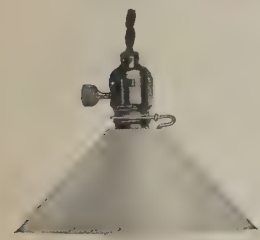
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For full particulars apply to

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"FOR THOSE WHO WANT THE BEST."



Fiberlite Shade and Holder.

Shade made from fiber similar to that used for lining sockets. Mottled green on outside and pearl gray inside. Fiber finished under pressure which gives it a gloss finish, furnishing fine reflection for light. So tough that edges will not break and so springy that it cannot crush. Holder of heavy wire; one piece, clamps to socket with a catch. One catch and no screws. Fastens to inside of shade and any tendency to pull off only makes it hold more securely.

Light as aluminum shades, which means cheap freight rates.

TO INTRODUCE ABROAD:

Upon receipt of \$40.00 in U. S. gold or its equivalent, we will box and deliver f. o. b. cars at New York, five gross of these shades in assorted sizes.

APPLIED DEVICE COMPANY, Springfield, Mass., U. S. A.

The National Emery Wheel Company

WORCESTER, MASS., U. S. A.

MANUFACTURERS OF

Emery and Corundum Wheels,

AND ALL KINDS OF

Emery Wheel Machinery, Emery, Corundum, Etc.
Thin Elastic Wheels a Specialty.

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Cable Address: "Computico, N. Y."

Manufacturers of

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Discounts on Application. Made for the Moneys of All Nations.

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Shipping weight, net, 98 lbs. (44 kil.); gross, 130 lbs. (68 kil.); 6.1 cu. ft. (172 cu. met.). Order direct or through any reliable exporter.



The "RELIANCE" Price, \$5.

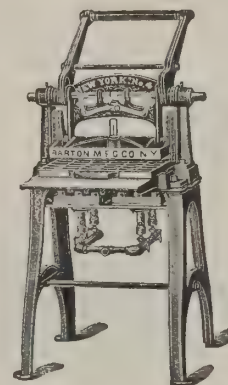
Automatic Numbering Machine

Discount, 30 Per Cent. in Lots of 1 Doz.
(Six Wheels) Numbers from 1 to 1,000,000

This machine is **automatic** throughout. It can be set to print numbers consecutively—print a series in duplicate—or repeat any number indefinitely.
No rubber used in the construction, and every machine is sold with our guarantee.
Style of imprint:—

123456

CUSHMAN & DENISON MFG. CO.
240-242 West 23d Street, New York



MAKE RUBBER STAMPS.

IT IS A PROFITABLE BUSINESS.

Our Vulcanizers and Outfits are in use throughout the world.

SPECIAL EXPORT OFFER.

Upon receipt of any of the following amounts in U. S. gold or its equivalent, we will box and ship through any commission house, f. o. b. New York.

For	\$25.	Outfit AA. Contains Vulcanizer, Mould Press, Type, Ink Pads, etc., and enough material to manufacture \$75 worth of Rubber Stamps.
For	\$50.	Outfit CC. Contains Vulcanizer, Mould Press, Type, Ink Pads, etc., and enough material to manufacture \$150 worth of Rubber Stamps.
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With each outfit are sent complete instructions for operating. Catalogue and Price Lists sent upon request.

Barton Mfg. Co., 335 Broadway, New York

The Glow Night Lamp.

A SCIENTIFIC WONDER

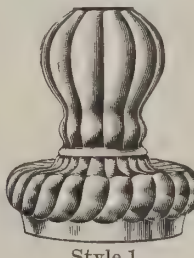
200 HOURS' LIGHT FOR ONE CENT.

Makes and consumes its own gas, generated from kerosene oil.

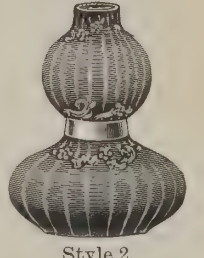
The only lamp using a glass burner.

Absolutely Safe and Free from Smoke or Odor.

Catalogue and Price List sent on application. Patented in the United States, Gt. Britain, France and Austria.

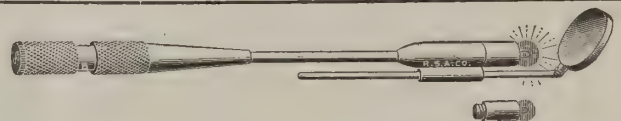


Style 1.



Style 2.

THE GLOW NIGHT LAMP CO., Incor., 73-75 PEARL ST., Boston, Mass., U.S.A.



No Physician's Office Equipment Is Complete Without Some of Our

Diagnostic Instruments,

With COLD LAMPS.

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WOOD HEELS.

Also Fancy Covered Heels.

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Ants, Roaches and Water Bugs

YOU CAN GET

"RID-OF-UM."

TRADE MARK.

It Is Easy if You Use the "RID-OF-UM" Trap.
A Sanitary Method of Destroying.
No Poisons. Send for Sample.

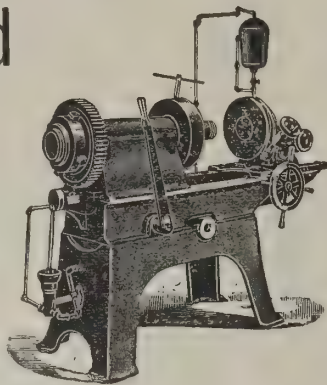
A careful study of the habits of all troublesome bugs usually found in stores, warehouses, hotels, restaurants, and sometimes in private dwellings, enables us to state with authority that when one of any kind of bug gets into the trap, all of the rest will follow. Easily killed by dropping into fire or hot water. **Thousands in use.** Sent postpaid on receipt of 15 cents. Eight for \$1.

Special Terms for Export Trade.

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Built to Meet a Need

for a pipe-threading machine, to handle such work expeditiously and accurately. Built with a knowledge of what these needs have been and built to meet them squarely and fully. The machine here shown is our No. 3. It handles pipe from 1½" to 6". We make four other sizes that handle work from ¼" to 12". These machines have quick-opening, adjustable dies and such other features as tend to make them just right. Also manufacturers of Special Tools. Write for Catalogue.

**Williams Tool Co. ERIE, PA.****Palmer Gasoline Engines and Launches.**

Over 9000 in Successful Operation.

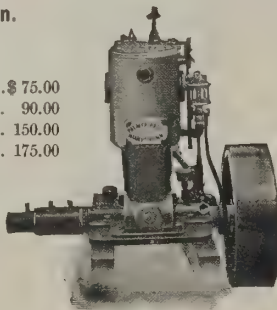
PRICES FOR EXPORT ONLY:

1½ H. P. Two-Cycle Marine Engine	\$ 75.00
3 " " " " " "	90.00
5 " " " " " "	150.00
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Four-Cycle Motors from 3 to 32 H. P. each.

Automobile Motors and Complete Launches.

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In Five-Pound Boxes and Fancy Packages.

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A WORLD-RENOUNDED REMEDY

For Coughs, Colds, Bronchitis, Asthma, Catarrh, the Hacking Cough in Consumption, and numerous affections of the Throat, giving immediate relief. They have received the sanction of physicians generally and testimonials from eminent men throughout the world. All dealers in medicines and proprietary goods can recommend them with confidence. Caution—"Brown's Bronchial Troches" are sold only in boxes or bottles, with facsimile of the proprietors on outside wrapper of the package.

JOHN I. BROWN & SON, Proprietors, Boston, Mass., U. S. A., and London, England.

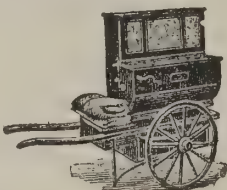
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9 First Street, New York City.

MANUFACTURER OF

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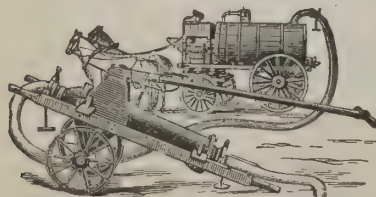
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PUMPS WATER BY WATER POWER.

Irrigation with Rife engines.

Does not require any care or expense.

Water supply for towns, railroad tanks, country houses. All engines guaranteed. Catalogue free. Estimate furnished. Engines never stop. Pump water to 30 feet high for each foot of head. 4,000 engines successfully working.

RIFE ENGINE CO., 126 Liberty St., New York, U.S.A.**METAL CEILINGS.**

We are constantly improving and adding to our line.
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We Are Manufacturers of Sheet-Metal Goods "from Start to Finish."

WHEELING CORRUGATING CO., 47-51 Cliff St., New York, U. S. A.**NORTHROP'S Stamped Metal Ceilings,**

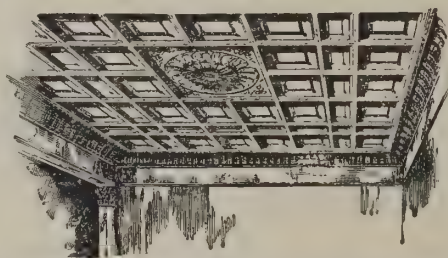
In Soft Sheet Steel,
For All Buildings.

Highest Prize Paris
Exposition, 1900.

Send for Catalogue. Give diagram of the room for an estimate.

Northrop, Coburn and Dodge Co.,

40 Cherry St., New York, U.S.A.

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Special Export Offer—Six trucks, packed for export and delivered, f.o.b. cars New York, for \$36.00 net.

Size of crate

with six trucks

20 x 26 x 40 in.:

with one truck,

20x26x8 in. Net

weight, 50 lbs;

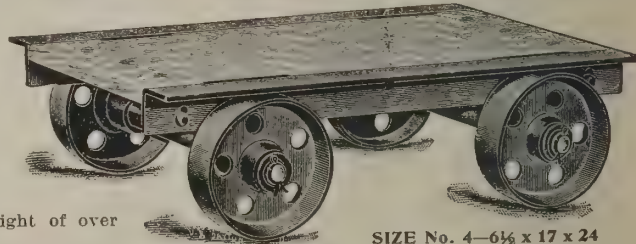
The truck,

shown in the

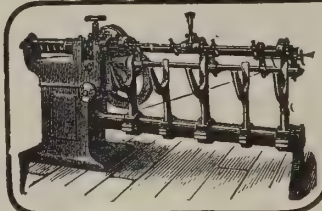
illustration

will carry a weight of over

2,000 lbs.

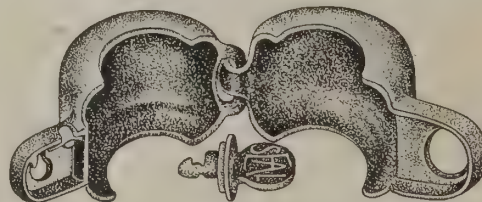


SIZE No. 4—6½ x 17 x 24

**Our Wire Straightening and Cutting Machinery and Riveters**

are the original and standard machines improved, and are guaranteed in every respect. Design and workmanship the best; quantity and quality of production unequalled.

SPECIAL AUTOMATIC MACHINERY. We have large and varied experience in designing and building special automatic machinery. All our construction is substantial, combining speed and simplicity, securing the minimum expense for operation and repairs. We have innumerable drawings and patterns, some of which might be adapted to your needs.

THE F. B. SHUSTER CO., Formerly John Adt & Son, New Haven, Conn., U.S.A.**STOP THIEF!**

NO MORE STOLEN GAS
OR WATER.

The Columbus Meter Seal insures absolute protection.

Impossible to tamper with the meter without breaking the seal—then the jig is up. Write for particulars.

COLUMBUS METER SEAL COMPANY, COLUMBUS, OHIO, U. S. A.**TANITE**

GRINDING
MACHINES.
EMERY
WHEELS.
EMERY.

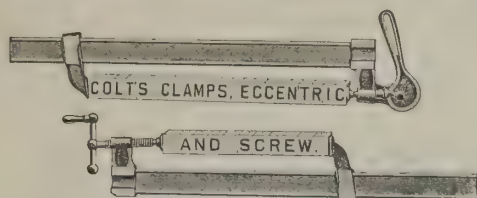
The Tanite Co., Stroudsburg, Penna., U.S.A.

You can buy to advantage through any American Export House—preferably in New York City.



Colt's Eccentric and Screw Steel Bar Clamps.

Quick
Acting.
Time
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Catalogues
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MANUFACTURED BY

BATAVIA CLAMP CO., Batavia, N. Y., U. S. A.



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Manufacturers and Exporters of

Drills for Hand and Power. Clamp Drills, 2 styles, 4 sizes. Turret Drills. Bench Drills. Track Drills. Drills with 1 to 10 spindles for 1/4-inch holes, with hand or power feed. Nut Tappers with 2, 3 and 4 spindles. Planer Chucks, round and square base, with jaws 6 in. to 30 in. long.

Correspondence solicited. Catalogue on "R" on application.

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An entirely new article; not the kind that you have used for the past 20 years, but a gold ink that is equal to dry bronzing. **Made only for Plated and Coated Stock.** Nothing equal to it. A time and labor saver. Any printer can use it. The most brilliant Gold Ink ever made. Give it a trial and be convinced. Something that all printers have been looking for. Rich gold, pale gold and copper, \$3 per lb.; aluminum, \$4 per lb. Put up in 1-lb. tin cans. Liberal discounts for quantities.

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PAUL MFG. CO.

Manufacturers and Exporters of

CANDO Silver Polish

Best in the World for Cleaning and Polishing Gold, Silver, Cut Glass, Nickel and Plated Ware.

N. B.—CANDO is free from all injurious substances, being a rapid cleaner and brilliant polisher.

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Celluloid Combs.

OUR SPECIALTIES ARE

Side Combs,
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MANUFACTURERS AND EXPORTERS OF

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AGENTS WANTED. WATER MOTORS AND FANS, ETC.

Adjustable Every Way While Running.
Patented June 28, 1898.
PHYSICIANS' AIR PUMPS. FANS. WATER MOTORS. SMALL DYNAMOS AND MOTORS. Beware of Infringements.

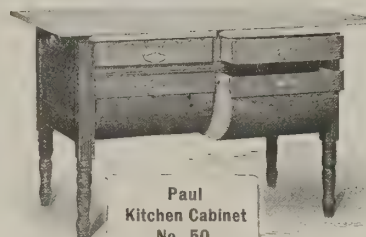


FOR COMPRESSING AIR.

Charging Batteries.
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Miniature Lamps.

LOOK FOR OUR NAME ON MOTORS.

The A. ROSENBERG CO., MANUFACTURER, Baltimore, Md., U. S. A.



Paul
Kitchen Cabinet
No. 50.

Just the Thing for the Kitchen.

PAUL KITCHEN CABINET No. 50

has hardwood frame and legs, oak finish, whitewood top, 26x47 inches; height, 29 inches; has 2 sliding flour bins, with 2-ply veneer bottoms, one partitioned for cornmeal, graham flour, sugar or salt; 2 drawers; 1 bread and 1 meat board.

Write for catalogue and discount.

Delivered k. d., f. o. b. New York, Boston or Baltimore. Each cabinet weighs 90 lbs. Packed 2 to crate. Size, 4 ft. x 3 ft. x 2 1/4 ft., or 30 cu. ft.; this is for 2 cabinets packed together. 2 cabinets weigh, packed, 210 lbs.

PAUL MANUFACTURING CO., Fort Wayne, Indiana, U. S. A.

ESTABLISHED 1832.

THE FAMOUS D. R. BARTON PLANES AND EDGE TOOLS



For Carpenters, Coopers, Wagon and Carriage Makers, Ship Builders, Wood Carvers, Butchers, Etc.

Not equalled by any other tools made in America. None better made anywhere in the world. Specified in United States Government requisitions. Send for Catalogue.

Made only by **MACK & CO., Rochester, N. Y., U. S. A.**

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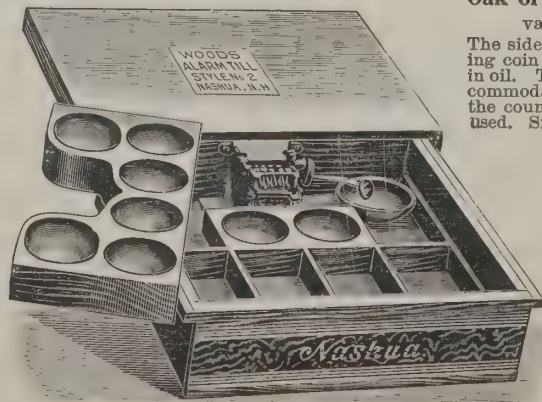
ESTABLISHED 1859

The drawer is made with Oak or Black Walnut Front, varnished and polished.

The sides, back and half-globe sliding coin cup of hard wood, finished in oil. The apartments made to accommodate the currency and coin of the country in which they are to be used. Size, 17x18 inches.

The Lock has 32 Combinations,

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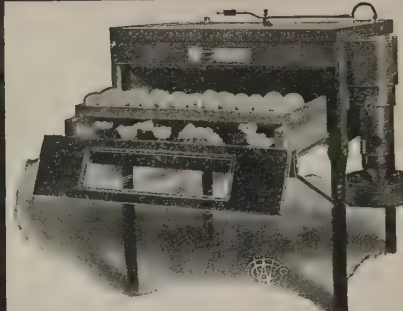
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CINCINNATI,
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VAN BIBBER'S "ROUGH AND READY" ("El Tosco y Listo").

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Printers' Roller Composition.


Gem Incubators

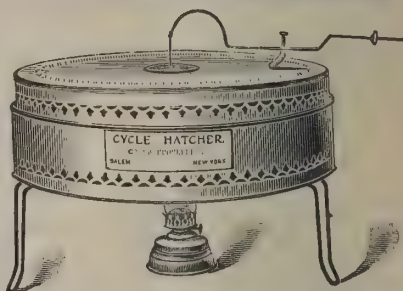
Are low in price, but this does not mean that they are cheaply made, or that they are inferior in any way. In fact, they are high grade in every particular and have several important features not to be found in any other hatcher.

Prices reasonable. Results guaranteed. Send for beautiful illustrated catalogue, mentioning this paper. Reliable agents wanted. Address

GEM INCUBATOR CO.,
Box A1, Dayton, Ohio, U. S. A.

A HATCHING WONDER

The new **CYCLE HATCHER**. An entirely novel method of hatching and brooding chicks. Requires only the self-supplied moisture of the egg itself. No egg-tray doors to open. Regulation automatic and exact. Holds from 50 to 10,000 and can be set with 50 or more eggs per day, making it unnecessary to fill entire machine at starting. Eggs cooled without removal from machine. Will hatch hens, ducks, geese and turkey eggs equally well at the same time. Made entirely of metal and asbestos. Is fire-proof and will not warp, swell, shrink or crack. 50-egg size, 7 x 17 1/4 inches; weight, 12 lbs. Net price, \$5.00. For full particulars address

**CYCLE HATCHER CO., Salem, N. Y., U. S. A.**

"They Sound Different" For Violin, Guitar, Mandolin, Banjo, Harps, Etc.

Carefully and accurately made from tested materials of superior quality. The product of the most modern type of American machinery and skilled labor. Specially packed with reference to climatic changes and thus kept free from rust and tarnish indefinitely. For Tone Qualities, Strength and Beauty of Finish they are unequalled. Samples and Prices on application.

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STEEL and WOUND
Musical Strings.

NATIONAL MUSICAL STRING CO.,
New Brunswick, N. J., U. S. A.

Poultry Supplies.

Prairie State Incubators and Brooders, Russ, Prize, Champion and Old Homestead Brooders, Wire Fencing, Feeds, Drinking Fountains, Bone Cutters, Caponizing Instruments, Lice and Vermin Killers, Condition Powders, Trap Nests, Cold Water Paint, Dog Medicines and Foods, Live Dogs, Cats, Chickens, Ducks, Geese, Pheasants, Pigeons, Guinea Pigs, Rabbits and Belgian Hares, Goats and All Kinds of Pet Stock.

A complete list will be found in our immense 162-page Illustrated Catalogue, which will be sent free to any address. Send for one.

Excelsior Wire and Poultry Supply Co.

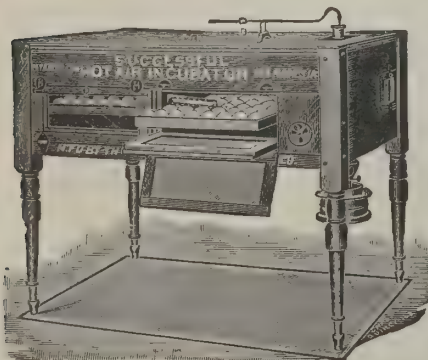
Dept. 2 E.

26 and 28 Vesey Street, New York City.

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First of all, get this book. No matter what other makers you write for a catalogue, write us, too. We will send you the best book of all—written by the man who has devoted 22 years in perfecting RACINE HOT-WATER INCUBATORS AND BROODERS. When you learn what he knows you will want his machine, we think. The book is our illustrated catalogue—that is why we send it free. But it is more than a catalogue. It tells all that an incubator should be and why. Write to-day for it. Reliable representatives wanted. Prices quoted for export admit of big profits. Address

Racine Hatcher Co., Box 217, Racine, Wis., U. S. A.**Incubators**

THE BEST THAT SCIENCE
AND MONEY CAN PRODUCE.

"SUCCESSFUL"

is regarded by those who have made money out of poultry raising as the greatest egg-hatching machine of the day. Heat, moisture and ventilation controlled automatically. Hatches well in the hottest and driest climates of the world. The walls of our machines are built on the refrigerator plan and packed with mineral wool asbestos. Sizes from 54 to 400 eggs. Prices from \$10 to \$37. Both hot-air and hot-water heating systems used. All hot water tanks made of 14-oz. planished copper.

A reliable representative wanted in every foreign country who is prepared to purchase a supply of incubators and brooders. Catalogues printed in English, French, German, Swedish and Spanish. Send for either Catalogue. Address

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The simplicity of the Stahl Incubators created a demand that forced the production to such great proportions it is now possible to offer a first-class 200-egg incubator for \$12.80. This new incubator is an enlargement of the famous

WOODEN HEN

recognized the most perfect small hatcher. This new incubator is thoroughly well made; is a marvel of simplicity, and so perfect in its working that it hatches every fertile egg. Write for anything you want to know about incubators. Send for the new free illustrated catalogue.

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This Trademark on every package.

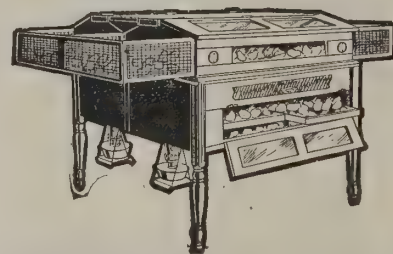
And we are the only Makers.

Have you seen Albany Grease? How many know its worth?

Cost of using Oil.**Cost of using Albany Grease.**

Look out for Yellow Label.

Cable address: "OEZRIC," New York.

ADAM COOK'S SONS.**313 West Street, New York, U. S. A.****OUT-HATCHES ITS COMPETITORS!**

Why does the Reliable Incubator give such remarkable results—hatching 85, 90, 95 per cent. of the fertile eggs? Because our heating, regulating and ventilating systems give pure, vitalizing oxygen to germ and growing chicks. Other reasons why the Reliable is a profit-bringer are its durability, and economy of time and material. It has double top and bottom, made of best kiln-dried lumber, so treated as not to absorb moisture.

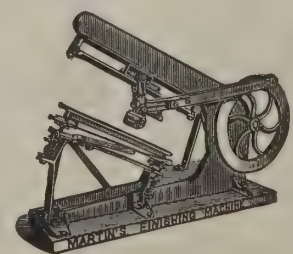
Reliable Incubators

have trays so constructed that it's easy to reach either eggs or chicks. Remember, too, that the Reliable out-hatches its competitors so often because the heat in corner or center

is always the same temperature—a mellow, even heat in every cubic inch of the egg chamber. Our new catalogue is free. It tells a lively story giving warnings, and simple, yet full instructions on hatching and raising poultry successfully. Just send 10 cents to pay postage

RELIABLE INCUBATOR & BROODER CO., Box A 000, Quincy, Ills., U. S. A.**WILLIAM F. MARTIN,**

MANUFACTURER AND EXPORTER OF

Martin's Jack for Finishers of Leather.

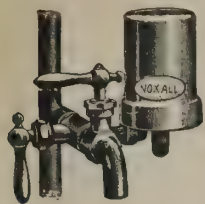
It leads all rivals. Compact, simple, easy and silent action. Quickly adjustable. Quantity and quality of work unequalled. High rate of speed.

Will set out, pebble, "stone out" and glass in black and paste. Using either oil or soap blacking entirely without hand labor.

For morocco or lining finishers, the Martin Jack will glaze, roll, pebble and glass out superior to other machines. Agates, Glasses, etc., in stock.

Orders filled through commission houses. Write for Circular "M." Address

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Noxall Natural Stone Water Filters.

Make all water, no matter how dirty, absolutely pure. Prevent typhoid and all zymotic diseases. Are small, compact, simple and inexpensive. All sizes and prices from \$2.50 up. For full particulars, terms, discounts, etc., write to

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WORCESTER ELECTRIC MANUFACTURING CO.

MANUFACTURERS AND EXPORTERS OF

Electric Knife Switches and Switchboards, Panel Boards and Cabinets.

Single Break, Double Break, Quick Break, Front and Back Connected Switches, Combination Switches.

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"STEER BRAND" PURE OAK

BELTING

GUARANTEED TO BE THE BEST.

37 Dey Street, New York, U. S. A.



Mey Detachable Chain Belt.

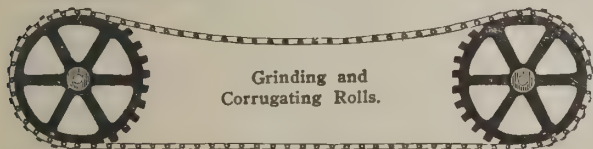
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The WINGET CONCRETE MACHINE CO.

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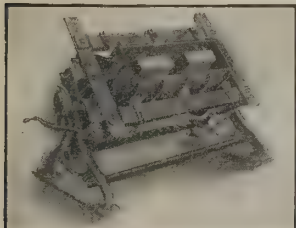
MANUFACTURERS OF

The Winget Concrete Building Block Machine,

Automatic, adjustable and rocking. To admit the facing of blocks. Combining ten machines in one, for the manufacture of concrete blocks for dwellings, factories, bridges, power plants, docks, retaining walls, tunnels, subways, silos, foundations, gutter blocks, wall copings, etc., etc.

SEND FOR OUR NEW CATALOGUE.

In order to facilitate our increasing export business, we desire to establish an agency with one responsible firm in each trade centre of the world.



Machine showing rocked position.

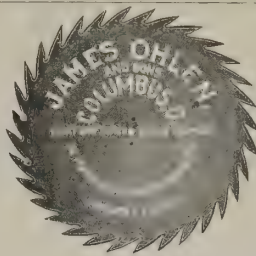
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WORCESTER, MASS., U. S. A.

MANUFACTURERS AND EXPORTERS OF CHICKEN FOODS,

Wish to call the attention of foreign importers to their "WYANDOTTE" CHICKEN FOOD, largely used in the United States by those who raise chickens either for pleasure or profit. It is a cheap, nutritious food; superior to any kind of grain or wet food for young chickens or for poultry. Send a trial order and you will become a permanent customer. Order through any responsible commission merchant. Send for Catalogue "R." Address as above.

Henry W. Peabody & Co., New York Agents for Australia and New Zealand.



Inserted and Solid Tooth Saws

MADE BY

OHLEN SAW MFG. CO.,

Columbus, Ohio,

and 118 Liberty Street, New York, U. S. A.

ARE WANTED TO GIVE SATISFACTION.

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WANTED Agents to sell our Whale Art Embroidery Needles, which do elegant work on any woven goods, making beautiful raised figures of birds, animals, flowers and many useful articles to ornament the home. Any person can use it and do the work ten times faster than by hand. This is one of the easiest and most rapid money-making propositions in the market. Our agents are making rapid sales and big money wherever they offer the Needles. No experience is required to make a success. We furnish the outfit and full instructions with the first dozen Needles, so our agents are at once fully qualified to begin work and are assured of a handsome income. Send for a sample dozen Needles and terms on large quantities. We send sample dozen for \$2.70. Our \$3.00 White Rabbit, Sofa Cushion and other samples of the work we furnish FREE to agents make it a pleasure to sell the Needles. **WHALE ART CO., 527 Bates St., St. Louis, Mo. U. S. A.**

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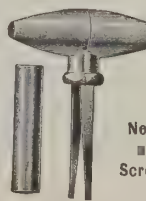


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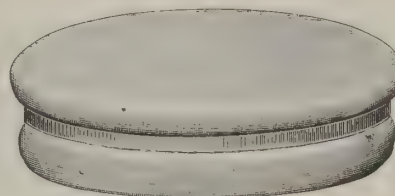
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It is *impartial* because it treats all its patrons alike. It cannot, for this reason, and it does not, publish write-ups or puffs of any specific make of goods, no matter whether advertised in it or not. It charges the same price for the same services to all alike.

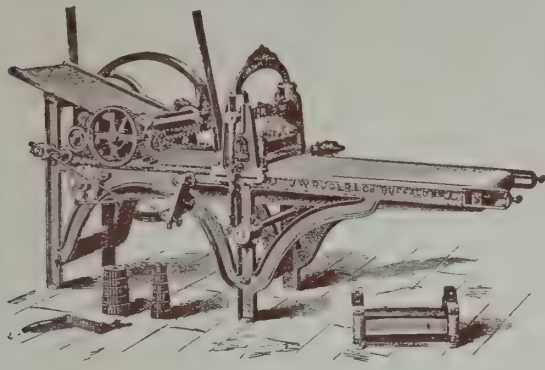
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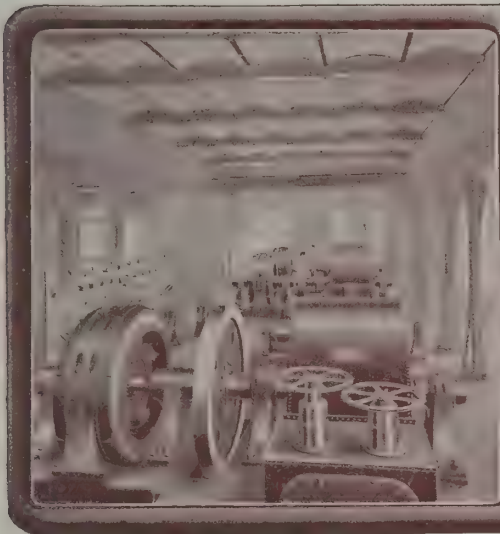
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THE COLD-WATER PAINT USED AMOUNTED TO ALMOST 400,000 POUNDS.

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are made from pure minerals, ground with a liquid chemical into a thick paste, which only requires the addition of water to be ready for instant use.

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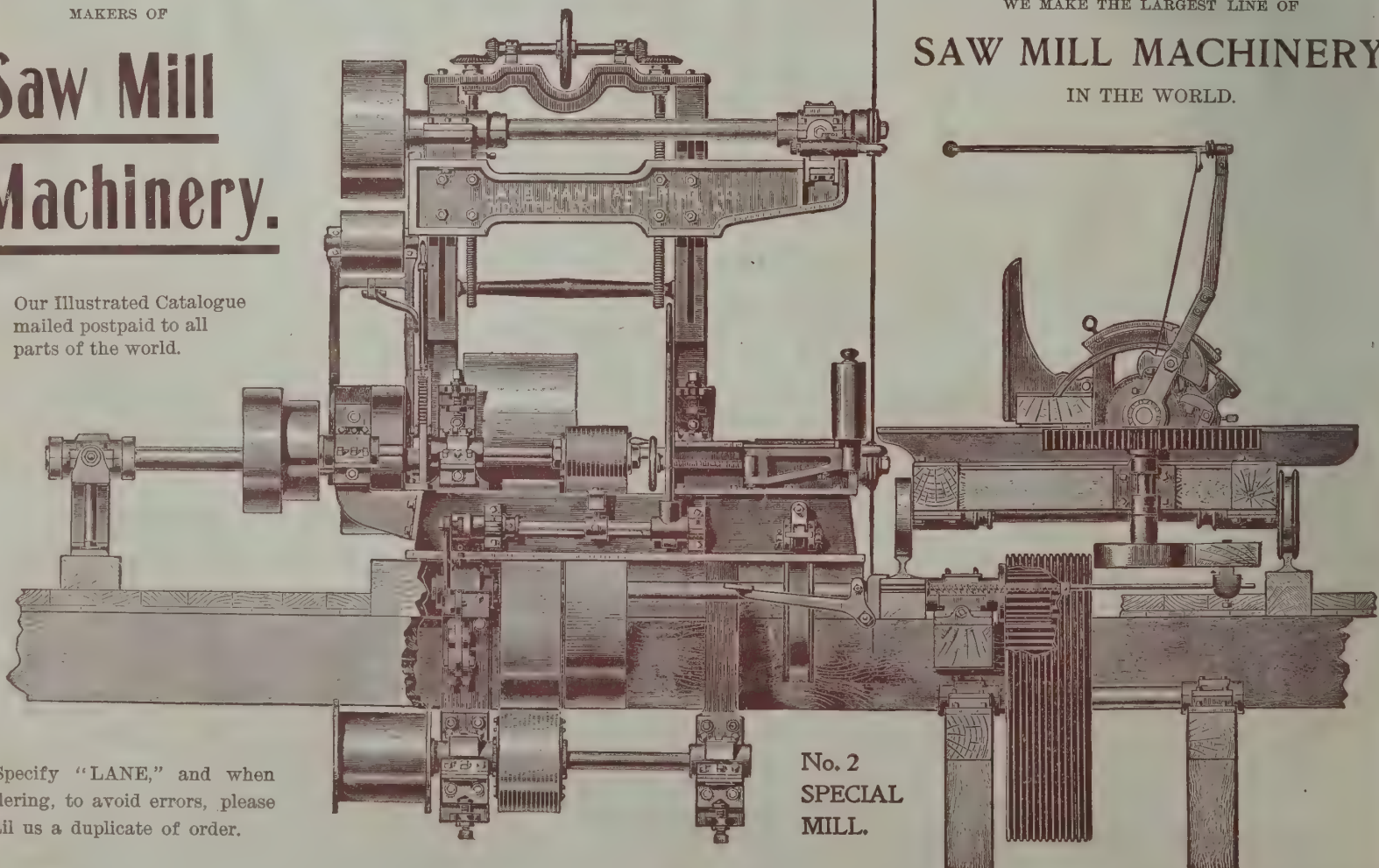
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